COMPUTERWORLD

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IBM's PS/2 Model 70 will pack 20- and 25-MHz versions of the 80386 chip in an effort to race ahead in the desktop wars. Page 8.

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Chip shortage to last another year as semiconductor firms avoid pitfalls of past cyclical disruptions. Page 4.

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In person: Manager of departmental computing at Coca-Cola Foods gauges the impact of clones on PS/2 acceptance. Page 37.

Mixing Japanese style with MIS in the U.S. produces competitive edge. Page 67.

Chalking up another first, Computer Associates piles up annual profits of \$100 million. Page 75.

Wang customers angered by company decision to price operating system separately. Page 15.

Battle lines drawn for control over Unix

Unlikely alliance reveals open systems agenda

BY ROSEMARY HAMILTON

NEW YORK - IBM and Digital Equipment Corp., never known for their love of Unix, teamed up with five other computer companies last week to launch the Open Software Foundation, an attempt to provide an open system standard and, in the process, take control of Unix away from AT&T.

The announcement was immediately met with skepticism, as observers questioned both the group's motives and its ability to carry out its stated intentions. At best, observers said, the group will stay true to its stated goal - but will find it nearly im-

IBM drafts

distributed

DBMS plan

BY CHARLES BABCOCK

IBM is expected to announce its

first products and overall approach for distributed data base

management within the next 60

days, finally entering the realm

in which users can share and ma-

nipulate data between main-

Last week, numerous indus-

try sources said they expect the

much sooner than most IBM cus-

expected to reveal the capability

of its DB2 to work with SQL/DS.

Although both are relational data

base management systems and both run on mainframes, they

use different versions of SQL

and function with different inter-

Among other things, IBM is

frames and microcomputers.

announcement this summer

tomers had anticipated.

nal procedures

possible to achieve. At worst, the group's motive is to slow down the growth of Unix by dividing the market and dragging its feet on a Unix standard, they added.

In addition to IBM and DEC, the group's sponsors are Apollo Computer, Inc., Hewlett-Packard Co., Nixdorf Computer AG, Siemens AG and Groupe Bull. The founding sponsors will each give OSF nearly \$14 million during the next three years.

OSF plans to operate as a nonprofit organization that will create an open system environment based on industry standards as well as emerging standards, such as the IEEE Posix specifications.

International flavor

The three initial OSF members - Apollo, DEC and HP - were vocal constituents of the socalled Hamilton Group, which first expressed its concerns about AT&T's handling of Unix and its alliance with Sun Microsystems, Inc. earlier this year. They won over IBM a month ago and got the three Europeanbased companies to join just a Continued on page 6

Open systems war

The Open Software Foundation has divided industry leaders over the direction of Unix

PRO:

"Open systems are part of the public trust." Kon Olsen, president of DEC

DBC "We've made a significant investment in Unix and are totally committed." John Ahers, chairman and president of IBM Customer "demands have been put ahead of our proprietary interests." John Young, president and chief executive officer of Hewlett-Packard

CON: "...an untested consor tium composed of members with inherently conflicting motivea." Robert Kavner, president of AT&T Data
Systems Group

"...nothing more than an argument among vendors, which will only serve to confuse..." Fred Wang, president of Wang "AT&T, as the creator of the Unix system, has handled its obligations to the industry appropriately." W Michael Blumenthal, chairman and CEO of Unixys

CW CHART

AT&T scoffs at power play

BY JULIE PITTA

SAN FRANCISCO - AT&T's top computer executive last week questioned whether a product will ever result from the unlikely alliance of IBM, Digital Equipment Corp., Hewlett-Packard Co. and four other ven-

"It's too easy to have a press conference and garner all the attention," commented Robert Kavner, the recently named president of AT&T's Data Systems Group. "We'll have to give them time [in order] to determine their motives.

Kayner raised doubts as to the purity of the Open Software Foundation's motives, "Right now, they say their motives are motherhood," Kavner quipped. "I seriously question that."

Continued on page 6

IN DEPTH: MIS STRATEGIES

Information on a global scale

BY CLINTON WILDER and NELL MARGOLIS

n the early days of E. I. du Pont de Nemours & Co., the family owners sometimes worked alongside their blue-collar employees, purposely facing the greatest hazards of 19th century factories. Such risk taking helped establish Du Pont's leadership in worker safety and other management issues in the chemicals industry.

During the 1980s, the Wilmington, Del.-based company has earned a reputation as a leader of a different sort — in its use of information technology as a corporate resource.

The head missionary in raising the information technology consciousness of Du Pont's upper management is Raymond E. Cairns Jr., vice-president of the Information Services Department. "If you asked me to name one thing my job is, I would say it's a marketing job, Cairns says. "My job is to sell [information systems] to upper

management. Cairns assumes final responsibility for what he calls the infrastructure, that is, Du Pont's corporatewide hardware networking and standards.

On that foundation, Du Pont has implemented industryleading systems, which include a 46,000-user international electronic mail network, the world's largest Digital Equipment Corp. Vaxcluster, two Cray Research, Inc. supercomputers, about 20 IBM 3090-class mainframes and hundreds of expert systems that are running on gen-

Continued on page 59



Du Pont's Raymond E. Cairns Jr.

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Continued on page 100

IN THIS

Memory hungry. Chips play too important a role in PC memory board expansion to be the object of scrimping and saving, MIS says, but skyrocketing prices could affect long-range purchase plans. Page 4.

Attention starved. IBM cuts in on Compaq's PC performance lead with 20- and 25-MHz PS/2 Model 70s, claiming the 80386-based systems are faster than Compaq's Deskpro 386/20. Page 8.

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Quotable

"I f you asked me to name one thing my job is, I would say it's a marketing job."

RAYMOND E. CAIRNS JR.
VICE-PRESIDENT
INFORMATION SERVICES
DEPARTMENT
DU PONT CO.

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REPORTER'S NOTEBOOK

Press day at DECUS

CINCINNATI — As more than 5,000 members gathered last week to attend DECUS Spring '88, the semiannual national symposium of the Digital Equipment Computer Users Society, one message was clear: It isn't just for techies anymore.

Now in its 27th year, DECUS — which claims to be the largest computer user organization dedicated to a single vendor — has been gradually changing to accommodate the new breed of Digital Equipment Corp. users ushered in by the company's assault on the commercial market. DECUS snokeswoman Mary B. Oskirko said.

mercial market, DECUS spokeswoman Mary B. Oskirko said.

"Traditionally, you equate DECUS with exclusively technical users," said longtime DECUS member and speaker Terry Shannon.
"But it's expanding to also be more MIS-oriented. Now that DEC is trying to address upper management users, so does DECUS."

The "new DECUS" was much in evidence at last week's event. For instance, in the DEC exhibit hall, for the first time at a DECUS symposium, the Maynard, Mass.-based manufacturer's wares were shown in an integrated, application-oriented format rather than on a product-by-product basis.

In the catalog of sessions, the likes of "CASE for commercial software," "VAX novice software clinic" and "A manager's guide to Digital" popped up among the host of more predictable technical eso-

While DECUS might be changing its face, the heart of the organization remains the same.

Technical or commercial, first-timer or veteran, members pledge their allegiance, their symposium attendance fees and a considerable number of volunteer hours each year to gain the three principal benefits of the organization: information, more information and a lot more information.

The informal exchange of information that takes place at DECUS is definitely the symposium's big draw. "People talking in the corridor—that's where the action is" said a DEC spokesman and DECUS member of many years. "That's where you save six months' worth of words"."

"I'm here to enlarge my knowledge — and I'm picking up a lot of valuable information," said Rene Bertrand, line support section manager for Quebec region controllers at Bell Canada in Montreal. Experienced in IBM computing, Bertrand is five months into a new job that requires him to become VAX-worthy as well. "I've been to many professional seminars, but the information exchange within DECUS is so much broader and deeper," he said.

Jerry Carpenter, operations supervisor at Southern Utah State College in Cedar City, Utah, agreed. "If you hang out at seminars that address the problems you're interested in," he said, "the talks you get into out in the hall afterward can end up helping you even more than the seminar did."

NELL MARGOLIS

PC clones penetrate Soviet Union

BY JAMES A. MARTIN CW STAFF

SUNNYVALE, Calif. — Thanks to Soviet Premier Mikhail Gorbachev's glasnost economic policies, an American microcomputer company is joining forces for the first time with a USSR firm to sell U.S.-designed micros in the Soviet Union.

Advanced Transducer Devices, Inc. (ATD) is scheduled to announce next week a joint venture in which IBM Personal Computer AT compatibles made by ATD will be sold and distributed to the Soviet market by a company cooperatively owned by ATD and V/O Electronorg-technica (Elorg), a Soviet electronics firm.

Selling American computers in the Soviet Union is nothing

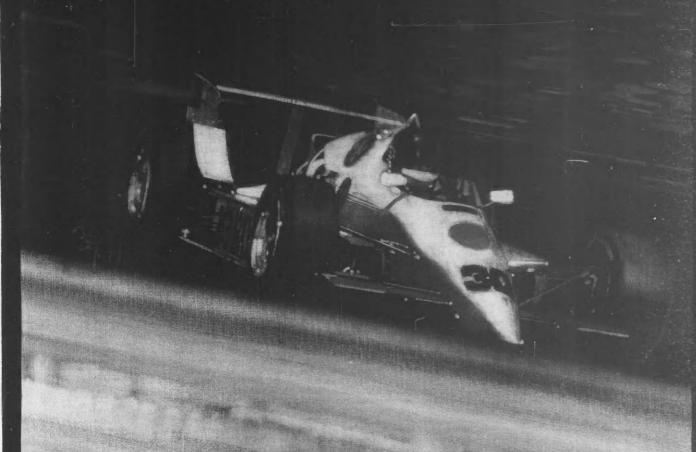
new; IBM has had a sales office in Moscow for years and just recently sold approximately 50 Personal System/2 Model 30s to a Soviet tractor manufacturer.

But ATD's agreement with Elorg marks the first time the two countries have banded together to produce and sell microcomputers.

"We're planting, in effect, an embryonic personal computer company," ATD President Matthew Zuckerman said.

A ribbon-cutting ceremony is planned next month in Moscow to officially announce the joint venture and the opening of a service, training and distribution center in the Soviet Union.

Apple Computer, Inc. is reportedly negotiating to sell computers in the Soviet Union, and other U.S.-based micro companies will be looking to enter the Soviet market in the future. "A joint venture is really the way to do it, and that requires a lot of time, patience and money," said Cliff Lindsey, an analyst at Dataquest, Inc. "If you have all that, you can get an adequate return on your investment."



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High cost of memory

RAM drought leads to long waits, rising prices

BY IAMES DALY

Although dynamic random-access memory chips continue to be eagerly sopped up by memory-starved users, MIS executives have discovered a new wrinkle they will be forced to contend with: soaring chip prices and little recourse but to grin and bear it.

"If you've got to have them, you've got to have them, no matter what they charge," said Joe Vincent, director of technology planning at Humana, Inc. in Louisville, Ky. Vincent said his memory expenditures have gone up fourfold in the past year.

'We can't have the weight of our business resting on the price of chips. We don't like it, but we grit our teeth and pay. It's better than not having them," he said.

Vincent's words echo the sentiments of several users caught in the wake of the increases who said the chips needed for personal computer memory board expansion play too important a role in their businesses to be the object of scrimping or purchasing cutbacks.

"Even if the cost of a system is \$200 or \$1,000 more, it's still peanuts compared with how much we need them," said Ron Goldfarb, manager of office automation at Pratt & Whitney Administration, a subsidiary of United Technologies Corp.

While finagling for chips has become common since the shortage left the industry in a stranglehold last year, users contend the higher prices add insult to in-"We're used to three months of high-level screaming to get memory boards for our PS/2s, but tripling the prices to boot still amazes me," said Harry Zupnick, vice-president of technology planning at Merrill Lynch & Co. in New York.

Far-reaching effects

Although users have begrudgingly learned to live with the chip and drought skyrocketing prices, some said a worsening situation could affect longer range decision making.

"If prices keep going up the way they are, it would add another notch in the minus column for [memory-hungry] to OS/2," said Phil Gordon, manager of office systems at Charles

Spot-pricing per chip for 256K-byte dynamic RAM chips - the price paid for quantities of

second quarter of 1987 to \$8 to \$12 today, according to Drew Peck, a semiconductor analyst at Donaldson, Lufkin & Jenrette. Inc. in New York.

And there appears to be no end in sight. Sun Microsystems, Inc. said last week that a "memory surcharge" of up to \$250 would be tacked on to much of the add-on capacity of its workstation product line. Wyse Technology also succumbed recently. admitting that its personal computer prices would rise 6% to keep up with the increased cost

from both a cutback in the alleged Japanese practice of dumping low-cost dynamic RAM chips in the U.S. market and the transition in chip manufacturing from the current generation of 256K-byte chips to 1M-byte silicon, said Stan Victor, corporate media relations director at chip

double whammy," Victor said. "Many firms didn't invest in new dynamic RAM facilities because they got burned so badly the last time chip prices fell. They converted old 256K-byte manufacturing plants to 1M-byte plants rather than invest in new facilities. So we're losing 256K-byte production while not putting out as many 1M bytes as we'd like."

gone from less than \$2 in the second quarter of 1987 to \$8 to **Dutch** suit

BY JAMES DALY

The European Community (EC) Commission has quietly cleared IBM of antitrust charges brought against it by three Dutch rivals and has dropped its inquiry into the matter.

'We came to the position that IBM hadn't abused its dominant position" in violation of EC competition law, said H. Collin Overbury, a director in the EC's Brussels-based competition branch, in closing the case

IBM received the decision in a letter last month. The investigation began in March 1987, when leasing companies Atlantic Computers, IBL and Econocom International N.V. charged that IBM's Dutch subsidiary was pushing them out of the market with predatory leasing rates [CW, March 23, 1987].

The case posed dangerous political ramifications for IBM. Because the company controls nearly 30% of the European hardware market, it has long been a target of barbs from government and local computer officials, and a loss would have made it harder for IBM to sell its computers to European markets.

COMPUTERWORLD

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usually less than 100 - has

of chips [CW, May 16]. The price increase stems

maker Texas Instruments, Inc. "Chip buyers are caught in a

Senior Editor Ed Scannell contributed to this report.

Semiconductor chip pinch: No end in sight

BY CLINTON WILDER

Believing that those who do not learn from the past are condemned to repeat it, U.S. and Japanese memory chip manufacturers are not rushing to invest in additional plant capacity. And that will cause the current dynamic random-access memory shortage and high prices felt by systems vendors to last for about a year, analysts said.

Shortages borne of demand outpacing supply are nothing new in the semiconductor business. The industry has experienced at least two previous boom-and-bust cycles in this decade

Once burned, twice shy

The most recent downturn of 1985 to 1986 was so devastating - slicing profit margins to nothing and driving five U.S. manufacturers out of the memory business - that chip makers are now wary of ramping up to meet the current high demand.

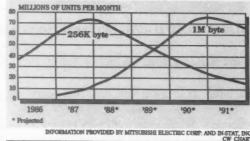
They were so badly burned then." said Daniel Klesken, semiconductor industry analyst at Montgomery Securities in San Francisco. "I think the Japanese manufacturers now are holding back a little, producing maybe

10% less than they could be. Prices would have to hold at current levels through 1990 for the industry to break even in this decade, so they want to enjoy the high prices as long as they can.

"I'm always surprised at the amount of memory people need," said Gautam Gupta, president of Ideassociates, Inc., a communications and memory board vendor in Billerica, Mass.

Behind the times

Demand for 256K-byte dynamic random-access memory chips may actually have peaked late last year, but the shortage has only recently begun to make an impact



Demand for additional memory has far outpaced the chip industry's transition from 256Kto 1M-byte dynamic RAM production, Personal computers and workstations, running on in-creasingly powerful micro-processors and memory-gobbling operating systems, simply require more and more memory

"Who the heck uses a 16M-byte board? I don't know, but we took 10 or 12 orders for them at Comdex for \$10,000 each."

Producing 1M-byte dynamic RAM chips is much more complicated than manufacturing their 256K-byte counterparts. results in lower wafer yields at this early stage of the 1M-byte product life cycle. And demand has thrown a spotlight on those production bugs.

"Those are really just normal start-up problems," said Victor de Dios, a senior industry analyst following the memory chip market for San Jose, Calif.-based Da-taquest, Inc. "If the market as strong, wasn't people wouldn't even notice.

The real McCoy

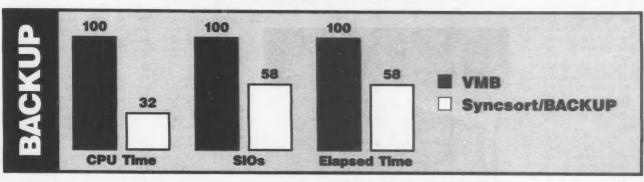
Although analysts said doubleordering, hoarding and graymarket speculating have exacerbated the shortage somewhat, no one thinks the shortage is artificial.

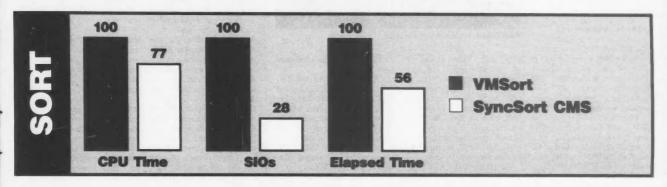
"I think most suppliers are trying to be responsible about that, taking only those orders they honestly feel they can deliv-Montgomery Securities' Klesken said.

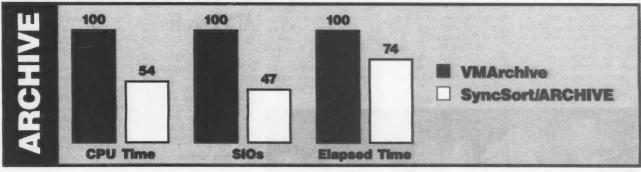
Is there any hope that chip producers and buyers can ever smooth out the recurring industry cycles of shortage and oversupply? Perhaps not, but some observers wonder if there could be more attempts made to synchronize the supply and demand

"There's no structure for users and vendors to communicate." de Dios said. "The two industries are heavily dependent on one another, yet the technologies and the people are very distinct, and each one looks at its own area."

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Battle lines

week before the announcement, in part to give the group an international flavor.

AT&T was asked to join as a sponsor company; it declined. Sun was not invited as a sponsor.

Although OSF representatives stressed that they hope to unify, not divide, the Unix market, the battle lines were being drawn last week as vendors began to side with one camp or an-

For example, Control Data Corp., Wang Laboratories, Inc. and Prime Computer, Inc. came out in favor of AT&T, while Cincom Systems, Inc. and Computer Consoles. Inc. sided with the new group.

The core of the OSF environment will be a yet-to-be-an-nounced version of IBM's AIX - an ironic twist, since IBM has long been accused by observers of being the vendor most strongly opposed to Unix.

AIX requirement

Some observers suggested that the AIX selection was a requirement for IBM's membership in OSF. Michael Gutman, Apollo's OSF representative, said IBM did not demand that AIX be selected but "strongly recommended we take a look at it."

"Either way, it's win-win for IBM," said Omri Serlin, president of Itom International, Inc., a consulting firm based in Los Altos, Calif. "If OSF takes off, they control Unix. If OSF fails, that's fine for IBM, too.

OSF will select other technologies to assemble around AIX, such as a user interface, to complete the open operating environment. All sponsor vendors have submitted products to be selected for the operating environment. Selections will be made independent of sponsors' proprietary interests, representatives said

The OSF environment has

been tentatively scheduled for release in 18 months.

Observers, however, said they doubt such a product will be out by that time. "This group will end up like most commit tees: not accomplishing much," predicted Dick Shaffer, editor and publisher of "The Technologic Computer Letter.

"Democracy is for electing presidents, not building prod-

workstation market and beat out not only the founder of the workstation market but the second biggest computer company in the world."

Sincerity pledged OSF members insisted that comnetitive motives are not in their hearts. Apollo's Gutman said. "We think this is where our customers want to go, and we have



Ken Olsen, at ease in any situation.

ucts," added Esther Dyson, editor and publisher of "Release 1.0," an industry newsletter.

John Doyle, chairman of the OSF board, said comparisons with other consortia or committees, such as Microelectronics and Computer Technology Corp. or the Corporation for Open Systems, are unfair, because OSF has specific product goals.

He stressed that the group will be run like a software company, with the president and his team making the decisions.

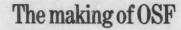
Some observers suggested that slowing down the development of this open system standard is OSF's real motive.

"Until Sun, none of them really took AT&T seriously," Shaffer said. "Those companies are paranoid about Sun, a little come-from-nowhere company that was able to come into the really listened to that open mes-

Other vendors that will stay, for now, in the AT&T camp said OSF's efforts could harm the Unix market more than help it. "That this group really subscribes to the idea of open systems can certainly be called into question," said Gil Williams, a vice-president and general manager of systems at CDC.

'These vendors have customers that they've held because of proprietary operating systems. It's not in their best interest to promote an open sysarchitecture,"

Added Joe Henson, Prime's chief executive officer, "This group serves to weaken the development of a single standard, which is in direct conflict to what users want."



t the same time that executives from Hewlett-Packard Co., Apollo Computer, Inc. and Digital Equipment Corp. were publicly complaining earlier this year about what they saw as AT&T's intent to tighten its control over Unix, they were privately hatching an al-

Two months ago, the three assembled about 10 staff members from each company at an Apollo facility in Chelmsford, Mass. The group began to toil away on two projects - sketching out what the alternative Unix would be and finding other companies to join its cause.

One month later, the companies captured the biggest prize of all: IBM. Now a group of four Unix rebels - representing some of the greatest rivalries in the industry ironed out details of the Open Software Foundation (OSF), with help from attorneys.

OSF staff were given an Apollo guest badge and were located down the street from Apollo corporate headquarters. The doorway to the temporary OSF office area had a five-digit combination lock, preventing any non-OSF embers from entering. Initially, three phones were set up, one designated for each company. If a caller dialed the HP phone, a secretary would answer saying, "Hello, Hewlett-Packard Conference Center."

One week before announcing OSF, the four won commitments from three European companies AG, Groupe Bull and Nixdorf Computer AG — which gave the group the international flavor it desired.

Just how the original three selected the four add-ons is up for debate. The IBM coup gives OSF clout and credibility, observers said. Glaringly omitted from the party list was Sun Microsystems, Inc, which has played a central role in the Unix marketplace. OSF representatives said Sun was overlooked because they had to establish a cutoff point. Otherwise, the new group would have become too big to

"Apparently, the board didn't feel [Sun] would move in our direction," said James Barclay, a DEC product manager who served as a consul-tant to OSF in its development stage

A second obvious omission was a user company, which can be seen as an important element in an effort that is, after all, aimed at users. "It either didn't occur to anyone or maybe one couldn't be selected," DEC's Barclay said.

ROSEMARY HAMILTON

AT&T scoffs

FROM PAGE 1

Kavner speculated the allies in the group may have banded together as a result of "paranoia" and fears that Sun Microsystems, Inc. may gain a competitive edge in the Unix market because of its alliance with AT&T and as an attempt to slow down Sun and AT&T's progress.

AT&T may borrow

Nonetheless, Kavner AT&T may incorporate features of the OSF's future version of the Unix operating system into its own if it deems the product worthwhile.

"It doesn't need to be AT&T technology to be Unix," he said. "If they produce something good, then we have to join the two together and forget everyone's pride. I'm not looking to make a bundle out of Unix."

Sun, AT&T's partner in the development of the future Unix System V, Release 4, chose not to publicly interpret OSF as a threat. Bernard Lacroute, Sun's executive vice-president, called the group's formation an important endorsement for Unix, which until recently was considered an operating system embraced almost exclusively by technical users.

"It's a recognition that Unix is a lot more important than it was in the past," Lacroute said. "It's also a recognition of the importance of standards," he continued. "From that standpoint, it's a validation of our strategy.'

Lacroute indicated that he beeves two implementations of Unix based on the same standard will result.

"As long as the user interface remains the same, the user will be the winner," he continued, maintaining that Unix's acceptance will continue to grow into mainstream environments. "I doubt that users will allow them to slow down the development of Unix."

Some AT&T licensees have charged that AT&T has not been forthcoming on what will be the terms for licensing the new version of Unix. But Kavner haven't responded, "We changed our licensing in 18 months. My job is to make sure that Unix remains open forev-



Exocutives representing the OSF's founding firms are, from left to right, Claus Kessler, executive vice-president, Siemens AG; Jacques Stern, chairman, Groupe Bull; Kenneth Olsen, chairman, Digital Equipment Corp.; John Akers, chairman, IBM; Thomas Vanderslice, chairman, Apollo Computer, Inc.; John Young, president and CEO, Hewlett-Packard Co.; Klaus Luft, chairman, Nixdorf Computer AG; John Doyle, chairman of the OSF board.

Users support AT&T's computer strategy

BY JULIE PITTA and KATHY CHIN LEONG CW STAFF

SAN FRANCISCO — Meeting for the first time with Robert Kavner, recently appointed president of AT&T's Data Systems Group, users welcomed the company's renewed commitment to the computer market.

Users invited to a three-day meeting with company officials here last week agreed that AT&T has been more open about its computer strategy than ever before. Joe Mahoney, president of the AT&T PC Users Group, based here, said AT&T is shedding a negative image of being a poor service and support supplier.

"We are seeing that AT&T is turning around and that they plan to stay for the long haul," Mahoney said.



AT&T Data Systems' Kavner

He continued, saying that AT&T's commitment to Unix is an excellent strategy, particularly since the operating system is gaining a bigger user following.

"Two years ago, we didn't have the customer base," Kavner said during a briefing following meetings with AT&T customers. "In fact, two years ago, all of you were questioning AT&T's commitment to this business and criticizing the lack of a clear strategy. And two years ago, one of our fundamental building blocks, the Unix operating system, was

CORRECTIONS

Maxtor Corp. is not, as previously identified [CW, May 16], a Japanese company. In the editing of the story about optical disk drives, a quote by Ken Hallam, president of ENDL Associates, that said, "This is not a breakthrough technology," was inadvertently located after a paragraph about Tandy Corp.'s product; Hallam was actually discussing Maxtor's magneto-optical technology.

The Palo Alto Research Center, or PARC, remains one of three research centers in Xerox Corp.'s corporate research group [CW, April 25]. Parcplace Systems, Inc. is a venture-funded software company based on technology developed at PARC, in which Xerox retains a minority interest.

In the Spotlight article, "The wide world of nonimpact" [CW, May 9], the manufacturer of the magneto-graphic printer is Bull Peripherals.

the source of confusion and debate over which version was the real standard."

Kavner emphasized AT&T's support for a single Unix standard based on AT&T's Release 3, merging Microsoft Corp.'s Xenix and the University of California at Berkeley's platform and adding the Open Look interface, licensed from Xerox Corp.'s Palo Alto Research Center. That version is being co-developed with Sun Microsystems, Inc.

Support strong amid debate

Although the debate over Unix continues, both users and industry watchers appeared heartened by AT&T's recent efforts in the computer industry. AT&T produced an impressive list of customers, including American Express Co., General Motors Corp., Anheuser-Busch, Inc. and McDonald's Corp.

"I have started to take them more seriously in the last few months," said Clare Fleig, an industry analyst at International Technology Group. "They've put the pieces together in terms of their product line, and they're building a structure to market those products more effectively."

Although users expressed satisfaction with AT&T's quality, the firm still faces difficulty in penetrating IBM shops. Travelers Insurance Co. in Hartford, Conn..

uses AT&T's 3B computers as applications processors for its voice mail system.

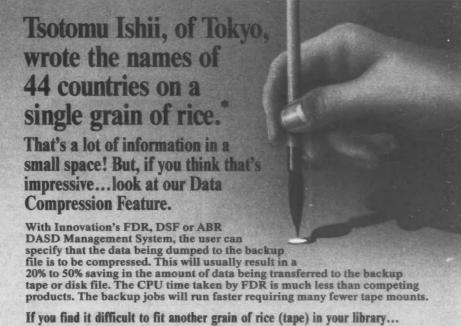
"The 3Bs work fine," said Trav Waltrip, director of telecommunications at Travelers. "But we are not using that equipment in data processing. I don't expect that to change."

Customers only, please

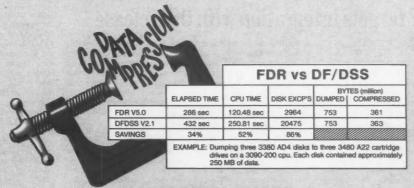
The customer meeting was closed to the press. However, AT&T hosted analysts and the press at a subsequent gathering.

An estimated 600 end users and valueadded resellers attended the national meeting, an event that would have been a flop in past years, Kavner said.

Most of the attendees represented MIS departments in large corporations, universities and government agencies.



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Managing MIS: Handle with care

BY JAMES CONNOLLY

The project manager - who shall remain nameless - walked into his new assignment armed with such technical expertise as quality control but shy on experience in handling people.

He tried to run a 40-person



Merrill Lynch's Hunt

development staff by imposing a system of checkpoints on programmers who needed leadership, not mandates, according to a peer. Productivity slipped, and the staff rebelled, not by shouting but through passive resistance. They worked, though not too hard and sometimes on the wrong tasks.

Eventually, moved on, and his successor put the project back on track. It was not a case of the successor being more skilled, "he just put a little common sense in place," the friend recalls.

Should one pity the MIS manager for the headaches of handling a force of self-motivated, creative and autonomous peo-

Or could it be that managing MIS employees is slightly differ-- but no more difficult than handling attorneys, sales

clerks, factory workers or anyone else on the corporate pay-

Interviews with MIS executives indicate that they lean toward the latter: MIS types, particularly analysts and programmers, are their own breed and require unique management approaches, but they are not the only workers who need special treatment.

Also, there is general agree ment on the type of worker MIS managers deal with and on some key considerations, such as employee egos and the paradox of programmers being creative people who like to work under

Public accolades

'The big thing is recognition of the sweat. It isn't wet sweat but the dry sweat of the brain." said Daniel J. Hunt, vice-president and senior systems manager at Merrill Lynch & Co. in New

Such recognition has to be more than a pat on the back and a cash reward. It must be public recognition by MIS management and by the user community that a particular worker did the coding for a new system, accord-

"My theory is that many peo ple who go into MIS do so partly because it is perceived in the academic world as being hard. Therefore, you end up with a lot of people who have big egos, which is good. I've come to the conclusion that if you deal with the egos, you can accomplish a

Such characterization of programmers and analysts as egocentrics runs throughout the comments of managers.

"To be a success in this business, you have to have a strong ego, be very sensitive and very service oriented." said Thomas S. Loane, senior director of data processing at Alamo Rent A Car, Inc. in Fort Lauderdale, Fla. "They want recognition. The generic rah-rah isn't important to them.

Structured creativity
Two apparently contradictory characteristics that set MIS workers, particularly programmers, apart from other workers are their creativity and their need to work with walls around them, according to Loane.

He cites the example of a programmer who must be innovative but also must work within the tight rules of a programming language. They live their lives expecting system responses that are as blunt as "syntax error."

One executive who called it a 'cop-out" to say that managing



Alamo's Loane

MIS workers is harder than managing other employees was Charles Siegman, information systems director at First Maryland Bancorp in Baltimore.

'Managing is managing, and motivating is motivating, said Siegman, adding that he has found it tougher to manage employees in foreign countries

throughout his work experience.

Siegman pointed out that there is one change that presents a challenge to MIS managers, although it is not new to other parts of the industry. That challenge is to solicit nontechnical people for projects, which he compared to the aerospace industry's technique of pairing business and technical people on projects in the early 1960s.

Challenge is on

An educator who has studied MIS employment issues for a decade is J. Daniel Couger, distinguished professor of computer and management science at the University of Colorado at Colorado Springs. "I don't think they are any tougher to manage, but they have different characteristics that have to be taken into consideration," Couger said.
"They have the highest need for achievement of 500 occupations, which means you have to have a continual challenge for them.'

A manager who suggested companies use the

work of behavioral psychologists such Abraham Maslow and Douglas McGregor to help solve human problems is William D. Harrison, engineering manager for the Siemens AG subsidiary Siemens Information Systems, Inc. in Boca Raton, Fla.

"You have to remember that you are managing the elite of creative people. These people have extremely

high intelligence, so they can't be sandbagged by the management," Harrison said.

He also pointed out the importance of managers dealing with the sensitivity of programmers and software engineers. 'I've seen managers say good morning the wrong way and software people go to pieces."

25 MHz for next PS/2

BY ED SCANNELL

DALLAS - In a bold move to steal the personal computer performance lead of Compaq Computer Corp., IBM will unveil 20and 25-MHz versions of its longawaited 80386-based Personal System/2 Model 70 here on June 2, according to a source within

IBM will attempt to cut into the beachhead Compaq has established with its Deskpro 386/20 by promoting the 25-MHz version of the system as the fastest in the Intel Corp. 80386-based desktop market, the source said.

The PS/2 Model 70's chassis is the same size as that of the PS/2 Model 50 and, like that model, will have three expansion slots. The base configuration will feature a 40M-byte hard disk drive. IBM has yet to determine a base price, the source said.

IBM will also announce a version of its PS/2 Model 50 that will support higher disk capaci-ties and speedier disk drives.

Moots FCC standards

IBM says the PS/2 Model 70's position as the fastest 80386 is assured because the shielding used in the Micro Channel architecture allows it to use a 25-MHz version of the 80386 that meets the Federal Communications Commission's radio certification standards, the source said. He said 25-MHz versions of the 80386 used in industry-standard architecture would have trouble meeting FCC limitations on emission of radio waves

It is essential that IBM establish a successful desktop 80386based system, because with the 80386 chip, it would be the preferred hardware platform for running the OS/2 and OS/2 Extended Edition operating systems and Presentation Manager operating environment.

Users said last week they would have to take a hard look at the PS/2 Model 70's price/performance values before making any decision; however, most said they were certainly interested.

'I'd have to benchmark it against the Compaq, but if we could get an IBM as fast as a Compaq and the price was down where it made sense, we would think seriously about buying it," said Ron Goldfarb, manager of office automation at Pratt & Whitney Administration, a subsidiary of United Technologies Corp.

We would be interested in a faster machine, but a lot depends on price and what happens to the rest of the line," said Otto Ei-sele, manager of office technology at Union Carbide Corp.

HP targets integration with OSI release

BY PATRICIA KEEFE

PALO ALTO, Calif. - Hewlett-Packard Co. last week introduced seven major additions to its Open Systems Interconnect (OSI) program, including a firstof-its-kind OSI processor.

The unveiling was targeted at Fortune 1,000 firms facing multivendor integration issues and upstages the June Enterprise Networking Event. Five of the seven products are based on Manufacturing Automation Protocol (MAP) Version 3.0.

The other two OSI offerings utilize Technical Office Protocol and CCITT X.400 electronic message handling standards to provide a mechanism for multivendor distributed applications development as well as electronic mail transmission capabilities.

HP OSI Express is a very large-scale integration processor card said to support the seven OSI layers, facilitating multivendor networking. What is innovative is the card's ability to off-load as much as 30% of the communications processing overhead from the main CPU processor to the personal computer, said Bernard Guidon, marketing manager at HP's Information Networks Group. The first implementation is the OSI Express MAP 3.0 interface card.

The card reportedly aids network performance by implementing the OSI model outside of the host system. It is also said to eliminate bottlenecks at external processors via a direct connection into the host.

The five MAP 3.0 services

and link products reportedly facilitate hierarchical communications from the mainframe to the personal computer. HP said the products address the top priori-ties identified by the MAP/TOP Users Group, Initial releases will support the entry-level HP 9000 Series 800 systems

OSI Express MAP 3.0 is an interface card that provides HP computers with direct network attachment via broadband or carrier-band cabling. Pricing will not exceed \$6,500 and \$5,000. respectively, for broadband and carrier-band.

 MAP 3.0 Manufacturing Message Specification (MMS) is said to provide HP users with an international standards-based command language for programming MAP-compatible devices. Pricing for MMS, cited as the

highest priority by MAP users for multivendor communica-tions, will not exceed \$2,500.

• MAP 3.0 File Transfer, Access and Management (FTAM) software reportedly enables the transfer and access of remote files across multivendor systems. Prices range up to \$1,500. Device interface system said to connect HP machines to any non-MAP RS-232C factory floor device. Not to exceed \$11,500, pricing includes a runtime li-

cense per system.

• MAP 3.0 protocol analyzer, said to decode the seven-layer MAP protocol stack and monitor IEEE 802.4 traffic. Pricing will not exceed \$50,000.

MMS software, OSI Express interface and device interface system will be available by year's end, HP said. The protocol analyzer is slated to ship in firstquarter 1989, the FTAM software in the second half.

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VAX/VMS enters new realm

BY ALAN J. RYAN

MAYNARD, Mass. — Digital Equipment Corp. recently rolled out Version 2 of its VAX/VMS Services for MS-DOS, which will reportedly let certain Microsoft Corp. MS-DOS-based personal computers take advantage of DEC's Network Applications Support to access information and services on the Decnet-Open Systems Interconnect network.

Version 2 of VAX/VMS Services for MS-DOS will be licensed with Decnet VAX as a VAX/VMS layered application.

In the latest version, file server perfor-

mance is 30% faster than previous versions, the vendor said. Other features include enhanced security access control, expanded third-party Ethernet controller support and a remote boot capability, according to John Rose, manager of DEC's Personal Computing Systems Group.

In addition, a high-performance virtual disk service offering performance equivalent to or better than an IBM Personal Computer AT with a hard disk has been added, Rose said. "The Microvax 2000 with VAX/VMS Services displays performance faster than a stand-alone PC AT with a hard disk at loads of one to 21 active users," he said.

In performance testing between VAX/VMS Services for MS-DOS Version 2 on a Microvax 2000 and Novell, Inc.'s System Fault Tolerant Netware on a T386, a Novell server based on Intel Corp.'s 80386, Rose said the DEC system was 30% faster for 15 active personal computer users on the network and 12% faster with 32 active PC users.

Rose said the tests simulated a PC operating environment running a mix of applications, including Micropro International Corp. Wordstar word processing, a Lotus Development Corp. 1-2-3 spread-sheet and terminal emulation.

The license for Version 2 of VAX/VMS Services for MS-DOS is included with Decnet VAX. Media and documentation can be purchased separately for \$650.

U.S. West to bring ISDN to major cities

BY PATRICIA KEEFE

DENVER — U.S. West announced last week that it will offer services based on the Integrated Services Digital Network (ISDN) standard to customers in seven cities beginning Sept. 21.

U.S. West, the first to launch a com-

U.S. West, the first to launch a commercial trial, is considered one of the front-runners in the ISDN arena. Its ISDN offering follows one by Illinois Bell, which announced an ISDN tariff last month and is offering a service now, according to Steve Sazegari, an analyst at Dataquest, Inc. in San Jose, Calif.

These locales include Denver, Phoenix, Seattle, Minneapolis/St. Paul, Portland, Ore., and Omaha. The services are the result of two years of successful trials.

ISDN is said to provide faster data transmission speeds and the ability to send voice, data, video and facsimile messages on the same line at the same time.

Servicing network needs

A variety of new features will be introduced as part of a 2B+D basic-access or transport service and a 23B+D primary-access or high-capacity transport service. These reportedly will enable customers to streamline their communications systems with services such as remote security monitoring, IBM Systems Network Architecture (SNA) emulation, private-line replacement, disaster recovery and other uses of integrated voice, data and image.

Pricing for these services will be competitive with current U.S. West offerings, according to the regional holding company. However, initial individual case pricing will be higher than Centrex lines, a

spokesman said.
U.S. West launched what it said is North America's first ISDN customer trial in November 1986, with the Arizona State Department of Transportation and Administration, Northern Telecom, Inc. and NCR Comten. During the last 18 months, six more trials were added in Phoenix, Denver, Portland and Minneapolis/St. Paul.

The six multisite trials demonstrated some clear customer benefits, according to U.S. West, including the following:

 At Intel Corp. and Mountain Bell, the trial supported applications such as video conferencing, coaxial cable elimination, access to Digital Equipment Corp. VAXs, IBM 3274 emulation, basic voice modem pooling and integration of PCs, local- and

wide-area networks (WAN).
At the U.S. National Bank of Oregon and Pacific Northwest Bell, the trial resulted in successful voice, high-speed facsimile, WAN, SNA and other applications.
At the Arizona Department of Transportation and Administration, Honeywell Bull, Inc. and Mountain Bell, U.S West said users were able to replicate integrated transport, voice, data, telemetry, private lines and digital transport as stand-

alone or integrated products.

• At Mountain Bell, the trial successfully established voice/data calls between ISDN islands, resulting in integration of voice, data and packet switching.

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Driven by a powerful Network Control Language, NET/MASTER not only helps decrease downtime, it helps cut costs at Northwestern Mutual. As VTAM Specialist George MacDonald points out, the system's multiple sessions capabilities have allowed his company to delay hardware purchases and, in many cases, hardware upgrades as well as improve productivity. "I wouldn't want to have to manage a network lille curs without something as high quality as NET/MASTER," said MacDonald, whose company also utilizes SUPRA™ and MANTIS® from Cincom.

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Few rave reviews for Paradox OS/2

BY STEPHEN JONES

NEW YORK — Borland International made good on its promise to release an OS/2 version of its Paradox data base last week, but the new application may be little more than a basic port of existing DOS-based programs.

Although Paradox OS/2 was written to take advantage of IBM OS/2 Standard Edition 1.0's extended memory and multitasking capability, observers said the program offers little more than the same functionality found in current versions of Paradox running under DOS.

"This is what I ordinarily describe as a straight port," said Bill Higgs, director of software research at Infocorp in Cupertino, Calif. "It does the same thing under either DOS or OS/2, with no added functionality."

Paradox OS/2 costs \$725 and is scheduled to ship by the end of this month.

The program addresses up to

Amdahl says 4725 heir 20% faster

BY J. A. SAVAGE CW STAFF

SUNNYVALE, Calif. — Replacing its year-old 4725 series front-end communications processor, Amdahl Corp. introduced the 4745 series with 20% greater throughput. The new series reportedly will be available next month.

An Amdahl spokesman claimed the short product life of the earlier model was not caused by reliability problems but by the fact that the new model competes more closely with IBM's 3745 communications processor. The processors will be able to support multiple versions of software, initially with IBM's Advanced Communications Function/Network Control Program (ACF/NCP) Version 3 or Version 4, the company claimed.

By the first quarter of next year, Amdahl said, the 4745 will be able to support ACF/NCP Version 5.

Token-ring local-area network support and high-speed scanner capability, which will allow the new models to support multiple T1 or CEPT links internally, will be available within two years, according to the company.

ny.
The 4725 series was priced beginning at \$71,500. The 4745 Model 110 pricing begins at \$91,500; the Model 210 starts at \$120,000.

16M bytes of random-access memory and features multitasking of applications running under OS/2 protected mode, according to the commany.

Borland's most immediate competition will come from Microrim, Inc., which is selling its product R:Base for OS/2 at a price of \$895

Users can expect to see delivery of basic ports from other data base vendors that have recently announced similar development plans for Standard Edition 1.0 applications.

Philippe Kahn, Borland's president and chief executive of-

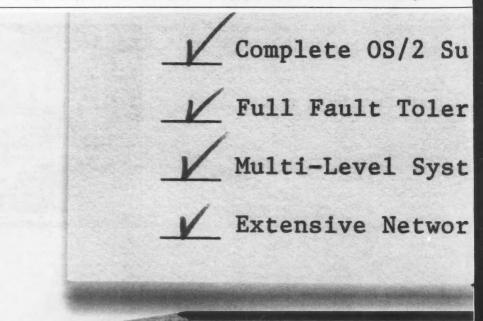
ficer, claimed that Paradox OS/2 is more than a simple port of a DOS application because it was rewritten especially for Standard Edition 1.0.

Kahn said the program was designed for large data base applications, allowing a user to simultaneously query a data table, print a lengthy report and enter data in another table.

The program also allows us-

ers of current Paradox packages to migrate their DOS-based tables, forms and reports to OS/2 without rewriting each item.

At last week's product introduction, Paradox OS/2 received votes of support from IBM and 3Com Corp. The nod from 3Com made it clear that Borland will be supporting both Microsoft Corp.'s SQL Server and 3Com's 3Plus Open LAN Manager.



SFT NetWare v2.1 MIS-conceptions about

Traditionally, the MIS world has viewed PC-based local area networks with a healthy dose of skepticism. A "prove it to me" attitude. And in an arena ruled by powerful mainframes, that approach has given rise to a few misconceptions and doubts about LAN performance.

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Wang to charge fee for VS OS

Users blanch at paying for previously bundled operating system

BY STANLEY GIBSON

LOWELL, Mass. - In a move that is grating on its users, Wang Laboratories, Inc. said it will be-

gin to charge separately for its VS OS operating system. The operating system had previously been bundled with Wang VS minicomputers.

Wang sent letters out to its

customers in March describing the change, which will become effective July 1. A Wang spokesman said his firm has been listening to user reaction for several weeks and is considering

changes to the new program. He said meetings currently taking place may come up with some new wrinkles for the policy, including other VS pricing

Although Wang has not announced what it will charge, Wang users turned thumbsdown to what they perceived as a price hike.

"It's a very blatant attempt to

make more money," asserted Don Dierath, vice-president at Life Investors, Inc. in Cedar Rapids, Iowa.

"It's not a good scene, but we are at risk on only one machine,' he added, explaining that he expects most Wang VS systems in his shop will not be affected because they have already been purchased or ordered.

In addition to being liable for additional expenses, Dierath complained that the licensing fee will lower the value of a VS CPU on the used market because the operating system cannot be sold with it. Whoever purchases the used system will also have to pay an operating system licensing

However, a Wang spokesman defended the practice, claiming that all other major vendors price their operating systems separately.

Dierath responded, But. "The other vendors that do this, their software is of better quality," complaining of shipping delays for VS OS Release 7.

spokesman asserted Wang's interest in the separate pricing was to reflect the fact that Wang incurs development costs for which it is entitled to compensation. He said the license rates will not be set until mid-June.

Affects competitiveness? "Generally, I think I view it negatively, because I think it will degrade their cost competitive-ness," said Neil O'Brien said Neil O'Brien, director of corporate office systems at The Mutual Life Insurance Company of New York in Syracuse.

O'Brien is in the process of a major upgrade of his firm's VS systems, which will take care of his company's needs for two

Having already ordered most of the CPUs involved in the upgrade, he said he would not be sharply affected by the separate operating system charges, at least for a while.

But when considering future systems for his firm, O'Brien said, "This has to weigh against Wang.

The policy states that for a new VS CPU purchased after June 30, a user must purchase a license on an annual basis or purchase a license on a one-time perpetual basis.

For customers choosing the annual fee, Wang is waiving the fee for the program's first year. Subsequent fees will be billed annually and must be fully paid in advance of the license period, according to the letter.

In addition, VS users who have current licenses or who receive a CPU and license before July 1 will not be charged an additional license fee. Those users may upgrade their systems once before July 1, 1989 without paying an additional fee, the letter

pport

ant Capabilities

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puts to rest the

SFT NetWare v2.1 simplifies network management with menu-driven utilities that let you control the network from any workstation. Advanced accounting features allow you to audit and account for users or departments utilizing network resources. Available communications links give you unsurpassed connectivity with mini/mainframe systems and other LANs. And SFT NetWare v2.1 supports OS/2 as well as DOS workstations.

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'Dumpster divers' have access to data

BY MITCH BETTS

WASHINGTON, D.C. — A ruling by the U.S. Supreme Court last week underscored the need for MIS managers to have an information security policy that extends all the way to the corporate trash Dumpster.

The high court's ruling in California v. Greenwood rejected claims that Americans have a reasonable expectation of privacy involving their garbage. Consequently, "anything put into the trash becomes fair game" for computer hack-

ers or corporate spies, according to Robert P. Campbell, president of Advanced Information Management, Inc., a Woodbridge, Va.-based computer security consulting firm.

Campbell said the so-called "Dumpster divers" look for competitive intelligence, private information on employees, system documentation, logic designs, flowcharts, passwords and even poorly disguised production data used for test purposes.

"A well-designed information security policy makes sure that sensitive data does not end up in the trash," he said, suggesting that companies consider paper shredders or compactors and the destruction of magnetic media.

The specific case before the Supreme Court involved a police search of the trash of two suspected drug dealers. Writing the court's majority opinion, Justice Byron R. White said a search warrant was unnecessary because it was "common knowledge that plastic garbage bags left on or at the side of a public street are readily accessible to animals, children, scavengers, snoops and other members of the public."

In the 6-to-2 court decision, the dis-

NYTHING put into the trash becomes fair game."

ROBERT P. CAMPBELL ADVANCED INFORMATION MANAGEMENT, INC.

senters suggested that picking through another's trash is revolting and uncivilized behavior.

Consultant Campbell said the ruling may be a boon for the growing "information underground" in personal credit and character information.

In addition, he contended that there is a high street value for private information that helps financial institutions determine a person's credit worthiness or helps employers gauge the character of job applicants.

Wang adds PC group, wants slice of the pie

LOWELL, Mass. — Wang Laboratories, Inc. intends to seek a larger chunk of the microcomputer market by aggressively expanding its sales beyond its base of minicomputer customers.

As part of the strategy, the company with shift the development and manufacturing of the microcomputer products to a new division called Wang Microsystems, which the company recently said will begin operations in August in Chelmsford, Mass.

"We have set up a dedicated division to ensure that Wang can quickly react to marketplace influences," said Frederick A. Wang, president and chief operating officer of the company. He said the new division will afford Wang a chance to become a major player in the microcomputer market.

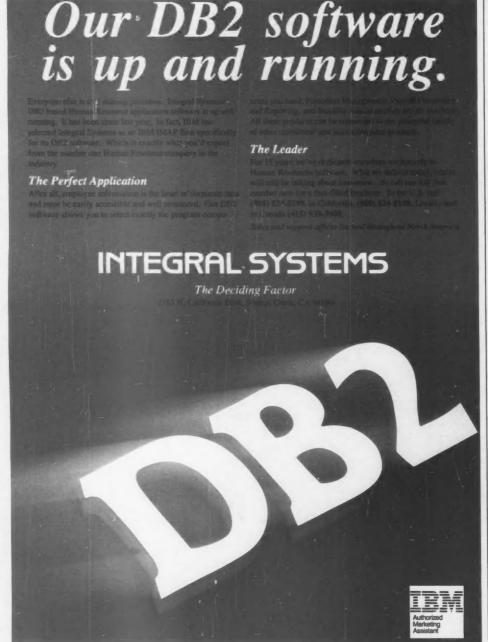
Broadening line

During the past two months, Wang has added local-area network products and established a new desktop integration strategy. The results will reportedly allow Wang products to connect to many other minicomputers, microcomputers and LANs, Wang said.

H. P. (Bob) Ano, 39, former senior vice-president of Wang's corporate marketing, has been named general manager of Wang Microsystems. He will report directly to Frederick Wang.

Ano said the company estimates that the demand for microcomputer products will continue to grow at a compound annual rate of 20% through 1992. To try to grab a portion of that, the division will develop and manufacture a line of micros and will evaluate direct and indirect distribution approaches, including the recruitment of additional sales agents, he said.

The micro systems division will have its own hardware and software research and development, manufacturing engineering, manufacturing planning and product marketing personnel. Eventually, it will include its own manufacturing operations, the company said.



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EDITORIAL

Behind the scenes

HE SCENARIO: Vendors representing more than 40% of the computer industry's worldwide sales, most of which have made their mark through iron-clad control of proprietary systems, will cooperatively develop a standardized operating system that will make it easier for customers to switch vendors without losing massive investments in applications code.

The historical truce: IBM and DEC, archenemies in the battle for the hearts and minds of corporate America's information resources, have forgone their traditional commitment to internally developed technology in favor of the concept of a standardized operating system. Signed on is Hewlett-Packard, which has its eye on cutting into the soft underbelly of DEC.

On the surface, the alliance represents the fulfillment of everything computer customers have been demanding during the past few years. These three companies — and four other less significant partners — have apparently managed to set aside their differences and agree to develop the ultimate operating system for which users have long pined.

In reality, the vendors may have pulled off the marketing coup of all time. Wrapping themselves in a punch list of warm and fuzzy coexistence buzzwords, they may have managed to derail an apparent growing movement among computer users to embrace Unix as a standardized operating system. The coming sales pitch is obvious: "Don't switch to Unix yet. We've got something better coming just down the road."

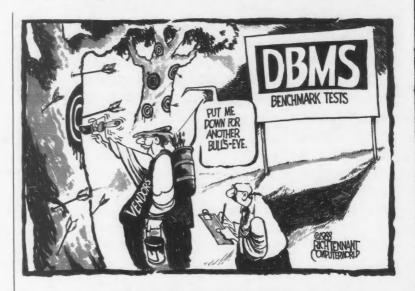
But first, consider how successful this alliance is likely to be.

The Open Software Foundation moniker has a nice ring to it, but the commitment of \$90 million in funding during three years by these vendors is a relative pittance compared with what they are putting into the ongoing development of their proprietary technology. That might be more than enough money for an aggressive start-up to dig in and come up with a revolutionary product, but seven hotly competitive companies boxed up in one room does not a start-up make.

Partnerships among competitors are tough enough to pull off when there are only two involved. When a venture proposes to include the two biggest and most combative players in an industry, along with five others, one has to wonder what they'll be able to accomplish.

IBM and DEC are totally committed to proprietary networking topologies. In the past, DEC has seemed unable to resist reneging on its open systems commitment with continual jabs at the MAP/TOP Users Group's rejection of Ethernet. IBM has often been willing to sit down at the standards poker table, but generally only when it has a Blue ace to trump the other players.

Information systems executives would be wise not to expect nirvana to arrive in the promised 18 months. They might do well to ponder the following questions: Is Unix so good that IBM and DEC are this threatened? Is the potential of the AT&T-Sun alliance so rich?



LETTERS TO THE EDITOR

Listen and learn

I am proud to be a data processing recruiter with a large network of satisfied clients to attest to the fact that my associates and I are ethical. I am sure that there are some clients that I inadvertently crossed in my 10 years of experience, but never once have I — or anyone else I know in the industry — practiced the underhanded tricks Anthony Reed expressed in his article "When the headhunter calls" [CW, April 4].

The next time a recruiter calls, *listen*. You might just hear the best opportunity of your career, and it won't cost you one cent. And, should you not want to listen, at least be pleasant. Recruiters are people, too.

Michele Popp Employment Consultant Davison Associates, Inc. Silver Spring, Md.

Beyond taxes

I found it interesting that the majority of letters — nine out of 13 — printed criticizing the article on Section 1706 [CW, Feb. 29 and March 1] were written by officers of large service organizations that are members of ADAPSO. These companies are the ones who benefit the most under 1706 by using congressional law to, in essence, outlaw some of their connectition.

Section 1706 is a concern to all independent consultants. The unclear nature of the law has resulted in many corporations refusing to contract any jobs with independents, regardless of status. There is no way for an independent to prove his independence, and corporations do not want to take a chance on an Internal Revenue Service challenge, as the author of "Independence, as the

dents' backs to the barricade" [CW, Feb. 1] accurately stated.

As in independent, I would like to state that the issue is more than tax benefits. Also involved is the freedom to work as we choose for whom we choose and to do the jobs we want to do. There may be tax cheaters among independent technical workers, as there are in any profession. However, the majority of us pay as much or more in taxes as do employees and have the IRS audit experience to prove it.

Mary L. Rich President PFS, Inc. El Segundo, Calif.

What a pity

Thank you for your support of the independent consultant. The pity is that with so much damage caused by this law, people will not be sued for damages.

Fred H. Greenblatt Data Design

Why not say 'her'?

I think it is high time you stop assuming that all computer professionals and their customers are men. Your lack of inclusive language is offensive, short-sighted and archaic.

I do not take the time to document every case I read, but here is one example. In the story "Strategic systems plans gone awry" [CW, March 14], the second sentence of the second paragraph read: "A few highly publicized fiascoes have sent shivers down many an MIS manager's back as he whispers to himself..."

The times are gone that the masculine pronoun is used for both male and female. The above sentence means MIS managers

are men, not women.

Such blatant exclusion is offensive. The computer profession has had to work hard to overcome some negative images. Such a disregard of societal changes not only perpetuates such images but makes change even harder.

Jill Meyer Minneapolis

Don't forget users

When one picks up Computer-world and reads about Apple Computer, Inc.'s suit, one nearly roars with laughter that intelligent men are involved in such tactics. But maybe we should cheer Apple on. I have recently been rudely awakened to the scheme of Microsoft Corp.'s Windows. We users have feared the day when IBM got someone else to play the role of bad guy — namely, Microsoft.

I agreed with the editorial "For shame" [CW, April 25]. For all appearances, the corporate folk are a little deaf, and if they are not careful, they are going to be in the same position as American car manufacturers, who refused to hear what the American car buyer was interested in.

Go ahead, Apple, blow Windows away. I would love to have your environment on my computer, but I'm not willing to suffer the corporate mentality that obviates the user.

Al Perkins Palm Coast, Fla.

Computerworld welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor, Computerworld, P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701.

A calendar full of conferences

If nothing else, at least there's money being made talking about security

JOHN BRUCE

"This is a closed session," the brochure says. "No recording will be allowed, and handouts will be limited. We reserve the right to refuse admittance. Attendees may be required to sign a nondisclosure security statement."

Thus begins the sales pitch for yet another computer security conference, which stops only this short of advising participants to bring their Captain Maryel decoder rings.

Ten years ago, data security was the unwanted stepchild of the industry. Now, free-lance consultants and Big Eight accounting firms alike have discovered its lucrative potential.

What is peculiar is that the money is not so much in computer security itself as it is in conferences, conventions, seminars, courses, meetings, newsletters, journals and guides about computer security: It's in the pat, not the butter.

The granddaddy of national conventions is run by the Computer Security Institute (CSI). A second conference is sponsored by the Information Systems Security Association. The National Bureau of Standards hosts a third. A fourth targets auditors and security administrators of IBM systems, which should not be confused with a fifth meeting for users of IBM's mainframe ac-

Bruce oversees computer security and disaster recovery at a California aerospace firm. cess control product, RACF.

CSI is now in its second year of putting on still another annual conference, this one for IBM and DEC users, billed as "2 Computer Security Conferences in 1." And users of Computer Associates International's access control systems hold separate conventions as well, bringing the total of annual national security conventions to at least eight.

This list omits the conferences and conventions for the related field of disaster recovery. People in computer security frequently double in that field, and in fact, the meetings cover overlapping material.

"Chart your course for better planning" urges the brochure of the Association of Contingency Planners, announcing its Annual Conference. The graphics suggest a nautical theme, and the sessions have fetching titles like "Ahoy Mates" and "All Hands on Deck." A few weeks earlier I could have attended one of the American Management Association's annual series of disaster planning classes.

This rundown doesn't even include Share and Guide meetings, both of which host full schedules of security- and disaster-related sessions. As if that's not enough, Big Eight firms and major vendors are covering the country with their own traveling shows: "How to Plan It," "How to Implement It" and "How to Audit It."

How many hats?

I began to notice this trend because of the volume of security conference junk mail that has been crossing my desk. During the peak spring/summer convention season, it is now possible to spend weeks at a time going from one to the next, and it appears likely that some people do just that. The same faces turn up again and again in the little photos above the thumbnail biographies in the brochures.

Quite a number of vendor and consulting firm representatives work this circuit — for obvious commercial reasons — but I am always puzzled at the speakers who seem almost permanently

seconded from their positions at

other companies.

Joe B. Smith, manager of accountability and planning control at Monolithic Diversified, speaks here on "Developing an Effec-Security Management Technique"; in the next city he addresses the intricacies of "A Structured Approach to Security Classification. And soon, he must dash off to the Coast to cov-'Auditability in the Networked Relational Data Base Environment" for yet a third au-

Does Monolithic Diversified ever miss Joe B. Smith? Do they ever feel the need for his expertise at home? Or do they think it's just as well that he's always out spreading the security word in Atlanta or Las Vegas? Eventually, someone at Monolithic may even ask why they still have Smith on the payroll.

When I get home, I hear from the telemarketers. "Hi, this is Steve Smooth in Chicago. Have you heard of the latest addition to the Hidebound Loose-Leaf Management Guide? It covers computer security and disaster planning from A to Z, we offer monthly updates, the newest in our series..."

I let him send me the free trial introductory volume, just to get

him off the phone. This book turns out to be a stack of public-domain material at least half a dozen years out of date, and I'd better hustle it down to the mail-room, because if I don't get it back soon my boss will be after me about the \$425 invoice.

The fact is that some of the most visible people and groups in the computer security and disaster planning fields are not in those fields so much as they are in the convention business, the publishing business, the consulting business or the (self-) publicity business

The big money in the field, to judge from the junk mail, is actually being made in talk or, in the terms the brochures prefer, "networking." I suspect as well that a heavy percentage of this big money is going to the Hilton and the Marriott and to American and Delta.

Now and then, my company will send me to a conference. I appreciate it, and I'm frequently surprised at what can be learned in a well-planned meeting.

But I'm beginning to wonder whether things are getting out of hand. I'm looking forward, and I think others are as well, to the day when a useful field outgrows its adolescent phase of being mostly talk.

















BOB DAHD

It's time to rethink ANSI role in standards

JOHN BERG



At the March IEEE Computer Standards conference, held in Washington, D.C., Hugh Thuerk, a

speaker from the American National Standards Institute (ANSI), was asked from the audience how an organization could vote on a proposed standard without participating in the committee developing that standard.

Thuerk skirted a direct answer, but the query prompted

Berg consults in strategic, technological and competitive-edge planning from Long Lake, Minn. He is editor in chief of Computer Standards & Interfaces and serves on the planning committee of the 1989 International Conference on Standardistica. considerable discussion from the audience that underscores the question of the suitability of ANSI's current procedures for developing computer and communications standards.

The simple answer to the opening question is that any company affected by the standard can request a ballot and vote during the balloting period.

Curiously, casting a 'no' vote might result in a challenge to the voter's legitimate interest in the product. On the other hand, I cannot recall any time a 'yes' vote was challenged by ANSI.

An animated debate centered on how ANSI tested an organization's legitimate interest in the standard. Soon the discussion turned to the more basic point that no one can vote without knowing the standard is being balloted.

Being informed on standards

takes on added importance when you realize that computer and communications standards are fast being globalized, along with the rest of the industry.

Filling in for the U.S.

At one time, the U.S. so dominated the computer industry that its standards were accepted throughout the world. Its technology and business decisions provided direction for everyone.

You don't need me to tell you that that's no longer true. What I will say is that this diminishing leadership role is creating a vacuum that ANSI, under its current rules, seems unable to fill.

Once, the equivalent International Standards Organization (ISO) technical committees deferred to the American Cobol, data base and data dictionary technical efforts. Now, only the U.S.'s leadership in Cobol con-

Recently, the ISO formed a strategic planning group, a move that was mirrored by ANSI. Characteristic of bureaucracies, these new groups add on to existing ones, making additional

demands on time and money.

ANSI's basic problem arises from its proudest boast: It is unique among the world's standards groups as a nongovernmental body granted the sole vote for the U.S. in the ISO. But exactly because of its status, ANSI shows an inordinate fear of its liability risks. It bends over backward to reduce itself to the role of facilitator, a mere catalyst in the production of standards.

The liability risk is certainly real. If the price of ANSI's boast is to leave the U.S. industry without direction and leadership in the growing global competition, then I think it is time to reconsider the organization's constitution and role.

Another sacred cow of ANSI procedures is the notion of voluntary standards. You can divide this idea into two parts: First, U.S. industry is not compelled to implement or use ANSI or ISO standards; second, ANSI standards are developed by volunteers representing those affected by the standards proposal.

I immediately agree that the first — to the extent that it is

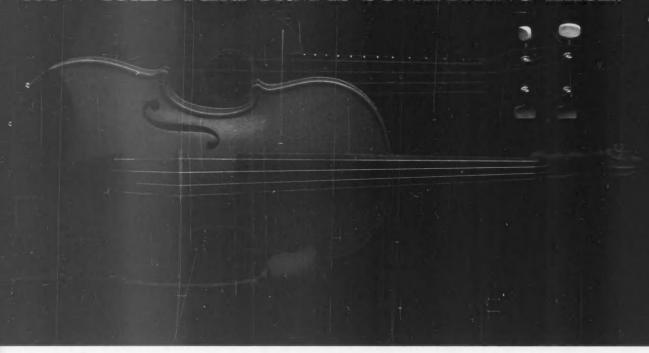
true — should continue unchanged. But the second is arguable under current competitive pressures. It simply makes no sense to structure a strategic plan, lay out the project and then find no volunteers for the critical path. Or worse, give a mission and objectives only to find that a significant number of the volunteers are there only to monitor progress or to prevent success.

Any successful chairperson of a standards group deserves accolades for being the epitome of the participative manager. Any unsuccessful chairperson who produces either no standards or flaccid, futile ones is more to be pitted than scorned.

Ray Walker, director of the British Information Technology User Standards Association, has proposed putting standards development on a more businesslike basis by contracting specialists to develop specifications.

ANSI's role in many industrial areas is laudable. But now we need leadership in computer and communications standards. It is time to do some zero-based thinking about ANSI's role.

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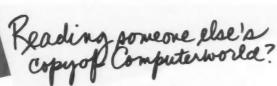
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SOFTWARE & SERVICES

TALK

Rosemary Hamilton

Unix users' call to arms



It's time for Unix users to get more vocal. Downright loud, in fact. With the in-

troduction last week of the Open Software Foundation (OSF), a group of vendors that includes the two most powerful in the computer industry - IBM and Digital Equipment Corp. - set forth a plan to provide an open environment for Unix users in which they could easily move from one vendor's hardware platform to another.

Sounds wonderful. In reality, the picture behind this very pretty one is unclear and confusing. The OSF, intending to simplify life for users, has unleashed a slew of new questions and made an already complicated market even more so. With many details of the OSF still being fine-tuned, it would seem that those questions will not be answered for some time.

Given the recent months of controversy surrounding Unix, it sounds strange to be calling for yet another voice in this market. There are too many voices already. But now it is the users who can step in and give vendors the answers to all the ques

Continued on page 29

BST speeds DB2 in batch mode

Source code change control system tracks 'footprints' of application pieces

BY CHARLES BABCOCK

A change control system is available for IBM DB2 applications that reportedly tracks the sometimes disjointed process of assembling an application and allows it to run in batch mode without IBM's resource-hungry TSO teleprocessing monitor.

Endevor-DB2 from Business Software Technology, Inc. (BST) in Westboro, Mass., interfaces with the Call Attach facility of DB2, which allows DB2 applications to run directly in batch

"It makes for much more efficient use of DB2 in batch," said



BST's John Burton

James R. Williams, manager of data base administration at Empire Blue Cross Blue Shield in New York, an Endevor-DB2 beta-test site.

"We were having severe performance problems. . . . We have a saying that when things slow down around here, we're 'DB2ing' the system," he noted.

In his most dramatic example. Williams said a major batch application that had previously required 15 hours to run under TSO was able to finish in two hours and 20 minutes after being compiled and bound by Endevor-

Empire Blue Cross Blue Shield uses DB2 in a large claims application that accesses records spread across 40 IBM 3380K disk drives. The application is executed on IBM's largest

Continued on page 31

Brokerage seeks to trade on AI

BY ALAN ALPER

NEW YORK - Manufacturers Hanover Trust Co. is in the final stages of an 18-month project to gauge the feasibility of using an expert system to assist its currency traders.

Using an expert system to recommend trading positions is considered one of the more ambitious applications of artificial intelligence, industry analysts have said. Building an expert system for trading is extremely difficult because most traders rely on a mixture of hunch, instinct and fundamental indicators rather than on a set of fixed rules, observers have noted.

In currency trading, for example, rising interest rates one week may influence traders to buy dollars and suggest selling greenbacks another week, noted Thomas Campfield, the vicepresident in charge of the expert system project at the bank hold-

Continued on page 32

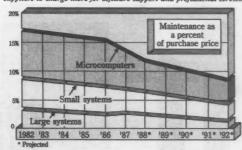
Inside

- Sterling Software releases interactive query and report system for DB2, IMS, VSAM. Page 29.
- Uniplex offers multiuse office system for DEC VAX. Microvax. Page 30.

Software services latest profit maker

Service fee mix changes

Hardware maintenance fees decline across all three tiers, prompting suppliers to charge more for software support and professional services



INFORMATION PROVIDED BY INPUT CW CHART

BY CHARLES BABCOCK

Hardware maintenance will increasingly become a price leader or nonprofit item for service providers, which will be forced to emphasize software support, training and other professional services to earn profits, according to a recent Input study titled Customer Service Pricing.

The Mountain View, Calif., market research firm examined last year's impact of IBM's Corporate Service Amendment (CSA) and Mid-Range System Amendment that shifted some of the hardware service burden onto the user in exchange for Continued on page 32

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Tandem adds system analyzer

BY CHARLES BABCOCK CW STAFF

CUPERTINO, Calif. - A system that analyzes performance information from a fault-tolerant system and assists in capacity planning has been introduced by Tandem Computers, Inc.

Surveyor, slated to be available in the third quarter, was designed to provide access to performance data through preformatted reports. The product digests the stream of statistics on system operations and summarizes them for a user-designated time period.

Surveyor can sum up processor use on

a daily, weekly or monthly basis, Tandem spokesmen said.

The system defines specific work loads for tracking to help determine resource requirements of particular tasks, according to the vendor.

In addition, Surveyor provides exception reports to simplify the identification of potential problems and monitor the conditions that produce them. The reports can be generated by a preset schedule or ordered on command, spokesmen

The information captured by Surveyor can be analyzed for capacity planning purposes. Projections of how a system work load is growing provide a means of forecasting future system requirements, the spokesmen related.

Surveyor works in conjunction with other Tandem performance measurement software and manages the storage of information from several performance monitors. It is built around Tandem's relational data base management system. Nonstop SQL

Surveyor can be geared to a particular

Tandem environment, the company said.
Surveyor carries a \$5,000 initial license fee plus a \$500 monthly license charge for Tandem's largest TXP and VLX systems. There is a \$2,500 initial license fee and a \$250 monthly charge for Nonstop EXT10, EXT25 and CLX sys-

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Introduction to

CCA Model 204 ups transaction throughput

BY CHARLES BABCOCK

CAMBRIDGE, Mass. — The Computer Corporation of America (CCA) is offering Version 2 of its Model 204 as a high transaction-processing throughput and reasonably priced system in an implicit comparison with IBM's DB2.

IBM recently upped the ante on data base transaction processing speed when it said Version 2 of DB2 could process up to 186 complex transaction/sec. CCA officials translated that rate into millions of instructions per second (MIPS) and concluded that DB2 can process 3.8 transaction/sec. per MIPS on a 3090 Model 600E. Model 204, in comparison, can process up to 17 transaction/sec. per MIPS, claimed Richard Winter, CCA vice-presi-

dent of technology.

CCA did not offer any audited benchmark results for its claims, but cited a study by William Inmon at American Management Systems, Inc. [CW, May 9] as supporting its claims. That study, extrapolating results from different machines, showed the Model 204 processing 547 transaction/sec. on a 3090 Model 400E

release of DB2 that preceded Vertsion 2. Model 204 is an inverted list-based data base management system compared with DB2, an SQL-based relational system.

compared with 106 transaction/sec. for a

Fit the budget

CCA officials pointed out that Model 204 runs comfortably on an IBM 9370 or 4381, the low end of the 370 mainframe line, while DB2 Version 2 runs only under IBM's MVS/XA or MVS/ESA on the hefty E Models of the 3090 series.

Winter attributed Model 204's transaction processing speed to its ability to bit map multiple indexes to its data bases for its query processor.

According to Winter, a bit-mapped index is able to compress a higher number of pointers per page of memory than competing systems and can deliver query responses much more quickly.

In an example provided by CCA, Model 204 is able to include 49,152 pointers per page of memory, compared with 1,000 for a single-indexed system.

The higher number of pointers has the effect of reducing the need for doing I/Os and reading pages of data to determine data locations, Winter said.

Version 2 of 204 is due out in the

fourth quarter at a price ranging from \$30,000 to \$200,000, depending on the operating system, CCA said.

Other enhancements include the following:

· A new dictionary-to-dictionary migration utility that aids the movement of application and data base entities and relationships from the development and test environment to production.

 New debugging tools for testing programs and complex subsystems under development by several programmers.

· A look ahead read feature for improving the performance of sequential record retrieval in batch processing.



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Hamilton

CONTINUED FROM PAGE 25

tions they've asked.

Some of the questions behind the OSF front are: How can the industry really achieve this notion of a single-standard operating environment if the originator of Unix doesn't participate?

If AT&T and its ally, Sun Microsys tems, remain separate from the OSF, how will a user decide between two stan-

What impact will the OSF have on those users with a commitment to AT&T's Unix?

The OSF alluded to migration tools that would help users move to the OSF environment. What if users don't want to make such a move?

Should those users intending to make new Unix purchases consider the OSF because of the big names involved? Or should they stay with the originator of

If seven top Unix systems providers those that launched the OSF going to one day offer a Unix based on IBM's AIX, what will happen to the Unix versions they now offer?

Do users want to standardize on IBM's AIX?

One is better than many

As many users explained in interviews earlier this month, a standard Unix is critical to their business. Many large commercial user sites have made recent commitments to Unix and see Unix playing a much bigger role in the future. But they can't afford to or don't want to support the necessary programming staff required to run multiple Unix systems. They want one Unix.

During these interviews, users also expressed a strong dislike for the controversies that now mark the Unix market-

Such feelings are similar to the factory networking market in the early

The multitude of vendor solutions and market confusion sparked one of the strongest user movements seen to date - when General Motors and other companies launched the Manufacturing Automation Protocol (MAP) users group.

It was interesting to watch MAP group meetings following GM's bold initiative. Vendors were flocking to users, and all were promising support of their standard.

Supply and demand

As was the case then and is the case now in the Unix market, users vote with their pocketbooks, and therein lies the ability to make a difference.

One of the many curious aspects to last week's introduction of the OSF was the absence of users. Here we had what was dubbed a major standards initiative and the very people that it was designed to help were not involved.

At the announcement, an OSF representative said invitations to join the organization had just been sent out to hundreds of companies, including other vendor companies and user sites

Whether users want to officially participate in the OSF or not, they should certainly let the organization know what's on their minds.

Hamilton is a senior writer for Computerworld.

Query system grants access to three major data base and file systems

BY CHARLES BABCOCK

CHATSWORTH, Calif. - An interactive query and reporting system for accessing information in IBM's DB2, IMS and VSAM data structures is available from Sterling Software, Inc.'s Dylakor Co. divi-

The Dyl-IQ Express system provides four querying methods: a menu-driven, automatic query generator that uses a fillin-the-blanks approach to specifying data and report layout; a natural language facility that allows end users to specify their own terminology; and a stored query facility to allow reuse of commonly used queries, according to Carole Morton, Dylakor president.

The system reportedly will be available in June for use under three teleprocessing monitors: IBM's CICS, TSO or IMS/DC. The IMS/DC and TSO versions access IMS and DB2 data bases. The CICS version accesses IMS (DL/1) and VSAM records. The system can also run in batch mode.

When composing a query, a user must specify field and field-value names or look them up through the system's Help facili-

System administrators may control resources accessed by Dyl-IQ Express to restrict data access.

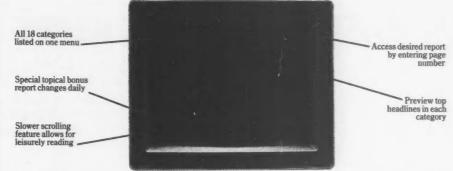
Data base administrators can predefine for a user what he can access. Designating the data base to be accessed prompts the field names associated with it to be displayed on the screen, and the user can then designate those he wishes to ac-

"We want to put SQL syntax into it in the first quarter of 1989," Morton said. The product will be priced from

\$20,000 to \$60,000.

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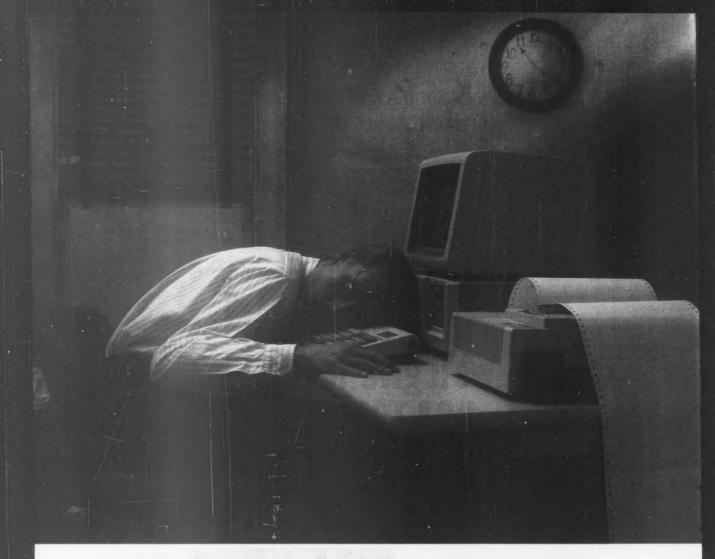
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Authorities in IBM'Software

BST

CONTINUED FROM PAGE 25

processor, the 3090 Model 600E.

Empire Blue Cross Blue Shield does not allow the use of on-line ad hoc queries against DB2 because their resource use is too unpredictable. Instead, the programming staff builds static SQL queries that appear to be the most efficient for batch applications, and Endevor-DB monitors their status.

So when a programmer modifies an SQL query, Williams wants to know who did what, where and when. "Endevor-DB2 will monitor the changes. No program modifications will occur without an audit trail," he said. Empire Blue Cross Blue Shield has been a beta-test site for the \$28,500 product since last fall.

The DB2 application building process includes steps that are not found in constructing an application for CICS Cobol.

While most third-generation languages go through a compile and link-edit process, the DB2 application must be precompiled, compiled, link-edited and bound.

The end result of the binding process is a DB2 application plan, or a combination of program logic, data access information and data base request modules formed from the SQL statements during the precompile process.

According to John Burton, executive vice-president of BST, these changes require several steps in which program components, if changes are occurring to them during development, can get out of sync.

When a development team is working on an application, there will be constant changes to the SQL source code, the data base request modules or the application plan, Burton said. A mistake will occur in some phase of the process, and the components will get out of step about 50% of the time, which will prevent the program from running, Burton claimed.

When a program refuses to run, a data base administrator can either try to track down the offending element or order all the most recently modified elements rebound. The rebind process — without Endevor — typically takes place under TSO, consumes CPU cycles and does not guarantee the program will run if the most recently modified components are not also the properly aligned components, Burton said.

Endevor-DB2 can use a DB2 table to store "footprints" for each component at each step of the process. When used with an earlier BST product, Endevor-C1, a source management system for IBM's MVS, Endevor-DB2 can reconstruct an application as it existed at any point in time from the footprints, according to Burton.

The two products together, both immediately available, are priced from \$64.500 to \$87.000.

Endevor-DB2 includes the following three modules:

Access Facility permits the execution of DB2 programs in batch mode without TSO.

 Plan Finder determines the correct application plan that will allow a designated DB2 program to execute.

 Migration Facilities provides a crossreferencing mechanism to identify which application plans and program levels need to be rebound to move a program into production.

Accelerator puts VAX tape drives in fast lane, stops I/O bottlenecks

SAN DIEGO — Touch Technologies, Inc. (TTI), a relative newcomer dedicated to wringing the max from the VAX, recently introduced a software utility that promises quantum reductions in tape I/O bottlenecks.

Dubbed Dynamic Tape Accelerator, the TTI offering relies on a proprietary I/O intercept routine to cache data and speed it on its way to any tape drive compatible with Digital Equipment Corp.'s VMS, according to company founder and President Daniel Esbensen. By bypassing the speed limit that VMS imposes on tape drives, Esbensen said, Dynamic Tape Accelerator can log performance improvements of 2-to-1 for most tape utilities. The product is written in the same languages as VMS itself, minimizing system overhead, he added.

Included is a function for backups, widely considered among a system operator's most important and time-consuming activities. The product's reduction of backup time by as much as 50% frees up the system and the operator for other

tasks, according to Esbensen.

In addition to saving significant amounts of time, Dynamic Tape Accelerator is said to prolong the lives of tape drives.

Available immediately, the Dynamic Tape Accelerator is priced at \$1,795 for any VAX; the price includes 90 days of technical support, with extended support available for \$500 a year.

TTI also offers several special pricing arrangements: a package including the Dynamic Tape Accelerator and the company's Dynamic Load Balancer is available at a price of \$2,995; existing customers can buy the new tape accelerator for \$1,595 until September 1; and special cluster, corporate and distributor licenses are available.



Services

CONTINUED FROM PAGE 25

lower maintenance fees.

"Third-party organizations had to follow suit, cutting deeply into their profit margins in order to keep pace," the study noted.

Leveling off

Service on mainframes has tended to stabilize in the 2%- to 6%-of-purchase-price range. The cost of service is not expected to go lower without utilizing the CSA-like agreement.

According to the study, users are now expressing preference for this type of agreement, however, because the reliability of hardware has increased dramatically.

Mid-range systems maintenance fees have, in the past, tended to run at 7% to 15% of the purchase price, but such recent offerings as the IBM 9370, Digital Equipment Corp.'s Series 8000 VAXs and Data General Corp.'s MV/20,000 have had service fees of only 3% to 5% of purchase price.

Supply up, costs down

According to the study, "Increased competition as well as increased use of remote support technology should continue to drive down small systems service pricing.

In accordance with this trend, the service provider has changed from an organization whose functions were offered for free in the 1970s to an unbundled and hardware maintenance-oriented organization in the early 1980s.

The service provider's latest evolution is one that now increasingly emphasizes nonhardware services.

Both hardware manufacturers and third-party service providers, such as TRW, Inc. and Control Data Corp., are currently being pushed into de-emphasizing hardware maintenance and emphasizing software support, consulting services, training and other implementation ser-

The service field itself is thus evolving from "reactive" remedial service toward "proactive" performance support, the study said.

Brokerage

CONTINUED FROM PAGE 25

ing company's investment banking sec-

Manufacturers Hanover is betting it can overcome that difficulty by mixing real-world experience from its best currency traders with financial market data massaged by proprietary financial mod-

According to the bank, the expert system will help its currency traders make better decisions more quickly, creating efficiencies that should translate into lower costs and larger profits.

Big risk, big reward
"The profitability we could gain even if we were only moderately successful is quite large," Campfield said, declining to quantify the dollars and cents that are involved. "The risk/reward is favorable; it's worth attempting," he said.

The bank spent the first half of 1987 interviewing seven traders to create a knowledge base. Manufacturers Hanover's expert systems experts -- its Systems Technology and Research group did the knowledge engineering. group used Intellicorp, Inc.'s Knowledge Engineering Environment shell and did their development work on a Symbolics, Inc. Model 3650 processor using the LISP language.

The knowledge base, which consists of 350 rules - approximately 175 of which relate to currency trading both technical and economic factors

Technical factors - the dos and don'ts of trading - are run through one module, while currency and other financial market data run through a modeling algorithm.

A trading recommendation is made after the technical and economic reasons

The system uses forward and backward chaining to allow traders to view the rationale of its recommendation.

A trade is only instituted if the trader agrees with the recommendation, Campfield emphasized.

The system functions as an aid. It's still the dealer's decision to make," he

Manufacturers Hanover set up a sepa rate portfolio earlier this month on which the system is making trade recommendations

If the system proves successful — as determined by the amount of profit made and trader feedback - the bank will implement it throughout its foreign exchange department in the September or October timeframe, Campfield said.

A delivery platform has not been chosen, he noted, although the firm is leaning toward multitasking workstations such as those made by Symbolics and Sun Microsystems, Inc.

A technical workstation is appealing because it allows traders to use the expert system in one window while viewing market data information or running their own financial model in another window.

The workstation would thus replace several terminals and micros on the trad-

er's desktop, Campfield explained. Campfield has not decided how many of the 30 foreign exchange traders in the firm's New York office will receive work-

That number will depend on how many traders react favorably to the expert system during the test phase.



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NEW PRODUCTS

Applications packages

Uniplex Business Software is now available for Digital Equipment Corp. VAX and Microvax computers running under the Ultrix and University of California at Berkeley Unix 4.3 operating systems.

The multiuser office system from Uniplex Integration Systems, Inc. integrates word processing, spreadsheet and relational data base functions into a single package for Unix-based computers. The product is composed of the Uniplex Advanced Office System, Uniplex II Plus 6.0

and the Uniplex Advanced Graphics System.

Uniplex Business Software costs from \$2,495 to \$61,185, depending on VAX and software configuration.

Uniplex Integration Systems, Suite 1300, Glen Lakes Tower, 9400 N. Central Expwy., Dallas, Texas 75231. 214-373-4971.

Languages

Signal Technology, Inc. has announced an optional decision-support component for Smartstar, its fourth-generation language application development

product for the Digital Equipment Corp. VAX/VMS environment.

Called Smartdecision, the product offers Lotus Development Corp.-compatible interfaces for graphics and spreadsheet applications and also employs ANSI-compliant SQL capabilities. It integrates with Smartstar and allows for read and write distributed data base operations from DEC's RDB/VMS and RMS file structures. The product will also interface with Britton Lee, Inc. file servers over Ethernet lines, according to the vendor.

Smartdecision costs from \$1,050 to \$8,000, depending on machine size and configuration.

Signal Technology, 5951 Encino Road Goleta, Calif. 93117. 800-235-5787.

Development tools

A real-time expert system for the development of small and mid-range expert system applications in a Vaxstation environment has been introduced by Gensym Corp.

G2 for the Digital Equipment Corp. Vaxstation 2000 is functionally identical to previously released G2 versions and knowledge — compiled in the form of application-specific knowledge bases — can be transferred between machines as the user wishes.

The product uses schematics, dynamic models and heuristics to represent the



Gensym's G2 expert system

professional's knowledge of the application. Explanations of reasoning can be requested or automatically generated, and dynamic simulation permits the user to test knowledge before on-line use.

G2 for the Vaxstation 2000 costs \$18,000.

Gensym, 125 Cambridge Park Drive, Cambridge, Mass. 02140. 617-547-9606.

Pansophic Systems, Inc. has extended its Systems Development Life Cycle line with the release of Panapt, a product developed for automated production turnover management in an IBM 370 environment.

Panapt automates the program production turnover process required to identify and approve applications and move them into production libraries. The software is said to manage the migration of application entities from Test to Quality Assurance to Production and to provide an on-line history of the production process. The system runs under IBM's MVS/SP, MVS/XA and TSO/ISPF.

Panapt costs from \$20,000 to \$40,000, depending on the terms of agreement and number of processors.

Pansophic Systems, 709 Enterprise Drive, Oak Brook, Ill. 60521. 312-572-6000.

Control Data Corp. has introduced a series of products that enable Digital Equipment Corp. VAX users to migrate to its Cyber mainframe systems.

The NOS/VE Migration Toolkit for VMS users includes six software applications and provides an interface for users working with VAX and Cyber systems.

The software components allow users to migrate data files, convert programs, test and debug applications and monitor performance. A tutorial is also included.

NOS/VE Migration Toolkit programs cost from \$21,500 to \$52,000, based on performance.

CDC, P.O. Box 0, Minneapolis, Minn.,

CDC, P.O. Box 0, Minneapolis, Minn., 55440. 800-553-2215.



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MICROCOMPUTING

MICRO BITS Ed Scannell

Wordperfect gets graphic



like graphical interfaces. After years of listening to Wordperfect yak about how it

didn't see the need for porting its applications to a graphical interface (except for the Mac, of course), guess who recently revealed that it will write for IBM's Presentation Manager? You guessed it. It seems the Wordperfect gang has put aside its long-standing philosophical differences with Microsoft over graphical interfaces and will do a version of its best-selling Wordperfect for the Presentation Manager.

Maybe IBM's involvement in the Presentation Manager project has proved enough of a rationale for Wordperfect to finally break down. The company has always felt uncomfortable about the fact that Microsoft was competing tooth and nail against them in the word processing market. One high-level Wordperfect executive once said, "We'll write for Windows when they get out of the operating systems business.

The company doesn't apear to be in any rush to bring a Presentation Manager-com-

Continued on page 39

Extended aid sought

Support modest for IBM operating system

BY ED SCANNELL

ATLANTA - While more than 70 developers demonstrated 130 programs for IBM's OS/2 operating system at Comdex/Spring '88 here earlier this month, fewer than 10 developers have promised versions for OS/2 Extended Edition.

Those that have promised delivery are hardly the giants of the industry: Lifetree Software, Inc., PCC Systems, Inc., Alloy Computer Products, Inc., Deci-Systems Support, Inc., ESCA, Inc. and Netwise, Inc. are among those that have made a

commitment so far. Even this handful will not deliver products any earlier than this year's fourth quarter, with

some not doing so until the second or third quarter of next year.

Many of the companies that

figure to entrench OS/2 Extended Edition as a de facto standard in corporate America, such as Lotus Development Corp., Microsoft Corp. and Ashton-Tate Corp., have been cagey. In fact, none of these firms have said when, if ever, they would ship versions of their best-selling packages that take advantage of Extended Edition.

Despite this early lack of commitment, IBM remains confident the program will be a major factor in corporate accounts.

"I think [Extended Edition 1.0] will be an excellent performer. The data base manager and communications manager will be

Continued on page 38

Card lets Macintosh run **MS-DOS applications**

BY ALAN J. RYAN

MILPITAS, Calif. - Most people buy the Apple Computer, Inc. Macintosh because they like the software. But some of those same folks still need access to IBM Personal Computer software, which has been the mainstay of American business for the bulk of this decade.

A variety of vendors, including Davna Communications. Inc. and AST Research, Inc., have tried to fill the void between the Macintosh and the PC with mixed success.

Now a new player has jumped into the game. Perfectek Corp. has just begun shipping a coprocessor card that it claimed allows the Macintosh SE line to run Microsoft Corp. MS-DOScompatible applications while running Macintosh applications simultaneously.

Once plugged into the SE ex-pansion slot, Perfectek's Mac Plus PC SE allows users to configure up to 640K bytes of memory for MS-DOS and compatible applications that can be run under both the Multifinder and Switcher modes, a company spokesman said. Multifinder and Switcher are extensions of the Macintosh operating system.

Mac Plus PC SE borrows memory from the Macintosh when needed but does not require SE memory expansion, according to G. S. Satya, president and chief executive officer of Perfectek. It also reportedly allows data transfer between the MS-DOS and Macintosh applications using the cut-and-paste features of the Macintosh.

Satya said that using the card, Macintosh users can run MS-DOS applications while enhancing that software with Macintosh features, including font styles, font sizes and most of the Macintosh desk accessories.

The card, which is available immediately at a price of \$1,195, uses Intel Corp.'s 8086 microprocessor and comes with an IBM-compatible printer and communication ports. The printer port supports IBM PC-compatible letter-quality printers and laser printers. The RS-232 port works on Appleshare networks as well, Satya said.

The Mac Plus PC SE comes with disk transfer and conversion utilities via Perfect Cable, which eliminates the need for an external 51/4-in. disk drive. For users desiring the external drive, the card works with both the Daynafile and Peripheral Land, Inc. Infinity disk drives.

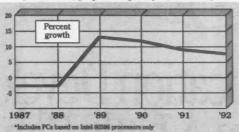
The card is also said to work with some Macintosh-compatible hard disk drives that can be partitioned for DOS applications.

Inside

. Coca-Cola's Currid plans for future. Page 37. · Powerpoint cases presen tation preparation. Page 37. Convergent adds to 80386-based line. Page 42.

Data View

Japanese PCs gain foothold Exports of 16- and 32-bit personal computers predicted to enjoy a growth surge this year, then level off



INFORMATION PROVIDED BY IDC JAPAN CW CHART

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SMALL TALK

William Zachmann

Fizzle. not sizzle



you are a venture capitalist with lots of money to invest. Now, pretend that a would-be

entrepreneur comes to you with a proposal for a new company that will develop and market an integrated software package for personal computers. He proposes bundling communications and data base programs to-

Let's assume, however, that the proposed data base program has less real functional capability than a good basic product like Symantec's Q&A. And that it doesn't even come close to the functional capabilities of a product like Borland's Paradox.

Imagine, too, that the communications program offers less local-area network functionality than current software from vendors like Novell or 3Com. And let's say that its function doesn't even match that of standard packages like Crosstalk Communications' Crosstalk or Smartcom or host connectivity products like the stuff from Digital Communications Asso-

On top of that, let's suppose that the business plan for the product calls for it to carry a pretty stiff price tag and that it's going to require a system with at least 3M or 4M bytes of memory and use upward of 10M bytes of disk space.

Coca-Cola's Cheryl Currid looks ahead; 386, SQL all part of the plan

Ten years ago, Cheryl Currid bought a \$599 Radio Shack TRS-80 Model 1 microcomputer. "That was the worst thing I could have done with my money," because there was no software available for the computer,

Back then in 1978 — Currid

was a saleswoman for M&M/ Mars candies and worked out of her home. Rather than let the software-starved computer go unused, she formed a group of hackers who together wrote what she claimed to be the first word processing program for the TRS-80 Model 1 that did not require a hardware modification to do uppercase and lowercase. Alas, the early days of micros were full of such quirks.

Today, with years of microcomputer experience behind



Currid predicts chip shortage will be a problem

her, Currid is the manager of departmental computing at Coca-Cola Foods in Houston. And she is no longer buying TRS-80s.

Currid recently spoke with Computerworld senior writer

nology, the value of networking, SQL and the IBM Micro Channel

What hardware platform have you standardized

It's mostly been Compaq Deskpro 386s. However, with the shortage of Compaq memory right now, we're looking at other people's 386s. We will also look at the new IBM 20-MHz unit that's just now shipping.

What will happen to the personal computer mar-ketplace during the next

I think PS/2 types [of machines] with Micro Channel will emerge. but I just don't know how quickly. I think that there will be broader acceptance now that

there are some clones. That's probably the best thing in the world that could have happened to IBM, because now it's OK to buy them, and there will be probably more third-party support for the boards.

But for now, does the rest of your MIS organization share your skepticism of the PS/2?

No. There are those within the main part of [Coca-Cola Foods] in Atlanta that are very pro-PS/2. and there are those who aren't. I think we're almost a subset of what the whole industry is doing.

How many PCs are you supporting at Coca-Cola? We don't release actual numbers. However, I will say that we're not at a 1-to-1 ratio. I Continued on page 40

Powerpoint outperforms patchwork graphics tools

BY DOUGLAS BARNEY

Before microcomputers, putting together presentations was a tedious process. The presenter would often cobble together some graphs and laboriously rework them when they were wrong or just looked stupid. times, the presenter would turn over much of the work to professional artists, who, despite their image as starving, rarely work for free.

Microcomputer tools made Continued on page 41 the job easier, but it was still an awkward process of switching between programs, each completing a part of the job.

Turning user frustration into opportunity, thought, Inc. introduced Powerpoint, a software tool specifically designed for generating presentations with slides, overheads or handouts with the help of an Apple Computer, Inc. Macintosh. Microsoft Corp., which itself used the product, liked it so much it shelled out \$14 million last summer to buy the company.

While not perfect, users from all walks of life have painted a

Powerpoint

Price: \$396

• Runs on Apple Macintosh Creates presentations including text and graphics • Can generate hard copy with reduced images and text to help guide the presenter

rosy picture of life with Powerpoint.

For Lt. Col. Jim Hopson, Powerpoint automates one of the most important and demanding of military tasks. "The Army lives and breathes off of slide presentations," explained Hopson, who, working at the Pentagon, serves as the Army's legislative liaison. For Hopson, Powerpoint is easy to use and

But for Jean Bishop, a secretary with the congressional inquiry division who works with Hopson, Powerpoint is less than straightforward. When one of Hopson's predecessors was transferred, he left Bishop a Macintosh with Hypercard and a trail of icons leading to Powerpoint. That trail was somehow disconnected, and Bishop has had trouble getting to Power-

Once she located Powerpoint, it still did not suit her style of computing. "I am a secretary, and I have to get things done. With Powerpoint, it takes me a bunch of steps. With Microsoft Word, I just click.

According to users, Power-Continued on page 41

Dbase helper

Ashton-Tate Corp.'s Dbase Assistant does not allow you to change directories, you can work around this problem by assigning each directory its own drive letter with the DOS Substitute command. Users can then easily switch between different drive letters with Dbase Assistant.

From DOS or from a batch file that loads Dbase, enter the following commands:

LASTDRIVE = G F: C:/DBASE/ SUBST DATA1

SUBST C:/DBASE/

This command sequence substitutes the drive letters F and G for the subdirectories Data1 and Data2.

You can enter any letter up to that which was specified with the DOS LASTDRIVE command. LASTDRIVE can be any letter - A through Z as long as it does not interfere with any network drives.

Information provided by Corporate Software, Inc., a Westwood, Mass.-based softmare reseller.

Stop thief! PC automates mug shots

BY DOUGLAS BARNEY

ANAHEIM, Calif. - Watch out criminals. Microcomputers not only know who you are, but they now know exactly what you look

A vendor with a fiduciary interest in law enforcement originally helped pioneer automated fingerprint identification systems. Now the company, De La Rue Printrak, Inc., has moved into automating mug shots.

With the Phototrak system, a law enforcement organization can have a lineup of suspects on computers to help arrest, identify and possibly convict a sus-

Phototrak provides an on-line data base of mug shots that an of-



The PC crime-stopper

ficer or detective can retrieve in seconds, the company claimed.

The system is more efficient than manual photo filing, so criminals can be indentified and crimes solved more quickly.

The system works in a variety of ways. For example, when a

uspect is booked, his photo can be taken with a video camera and entered into the system along with pertinent data, including his rap sheet, gender and physical characteristics.

The lineup feature allows a detective, witness or victim to view up to six suspects at a time. Photos can also be retrieved based on physical description, modus operandi, identification number or crime type.

A jail ID system retrieves photos of prisoners about to be released to ensure that the right person is actually released.

Phototrak allows remote terminals to access the central photo files, said Lionel Grove, product manager for Phototrak.

Prices for Phototrak start at

1776 touts revolutionary drive

SHERMAN OAKS, Calif. — For some users, a 10M-byte hard disk drive is enough. More demanding users have moved up to 20M-, 30M- and 40M-byte systems.

But 1776, Inc. wants users to forget all that and move up to 12G bytes of storage on a conventional microcomputer.

The disk drive firm is not foolish enough to assume that a typical Lotus Development Corp. 1-2-3 user needs multiple gigabytes. The firm does believe, however, that there is a growing market for micro-based file servers, expert systems and computer-aided design and manufacturing systems that demand

more storage than conventional

drives provide.

Dubbed Patrick Henry II, the caching external-disk subsystem offers 2-msec access time and fault tolerance, the firm claimed. The drives come in 600M-byte increments, but individual partitions can reach 1G byte and can span a number of subsystems.

the vendor said.

In order to get the full 12G bytes, users must link five individual cabinets. The product begins at \$12,200 for 148M bytes and goes up to around \$400,000.

In addition to storage, fault tolerance and caching, the Patrick Henry II comes with its own built-in Intel Corp. 8088-based microcomputer. This computer drives a color monitor on the

subsystem that monitors the drive's performance and allows for fine-tuning of the system. The system also has removable components, such as disk and tape drives, for easy servicing.

1776 is still offering the original Patrick Henry, which sells for \$4,000 less than the new version but does not include fault tolerance or removable components.

OS/2

FROM PAGE 35

leadership subsystems when they ship on 1.0," said Lee Reiswig, director of IBM's Austin, Texas, Entry Systems Division laboratory.

Observers who have peeked at early versions of the program seem evenly split on its capabilities and performance: Some say the program's data base and communications managers are winners; others say those portions of the program have no more functionality than existing programs like Borland International's Paradox relational data base and a slew of communications software packages.

Reiswig disagreed with the critics. "I think the data base manager is the most complete implementation of SQL in the industry, and we expect its performance to be exceptionally good," he said.

Clean up those clones

Some observers had speculated in recent months that the Extended Edition would not run on IBM Personal Computer compatibles. Reiswig said, however, that if manufacturers have done a clean job in cloning IBM's PC AT, they should have no trouble running OS/2 Extended.

Reiswig also said he does not see any problem with developers writing data base and communications modules that will compete against the IBM product by offering similar capabilities.

Already, Digital Communications Associates, Inc. and AST Research, Inc. have promised communications programs that will compete against the Extended Edition's communications portion. Others are expected to make similar announcements during the next few months.

"Ithink it is certainly possible to build a clone of the Communications Manager. There isn't anything we have done that would prevent anyone from doing it," Reiswig said. "It's just a matter of how well they will perform."

In fact, competitive products for Extended Edition are welcomed by IBM, according to Reiswig, because they offer customers a wider range of solutions on a variety of machines.

Everybody talks OLTP.

Tandem does it.

Scannell

FROM PAGE 35

patible application to market, however. A spokesman said it won't deliver a graphical version of Wordperfect until very late in 1989.

The sue-me sue-you blues. IBM looks like it's getting even more serious about defending its patents. In an recent ad appearing in a major metropolitan newspaper, the company was looking for intellectual property attorneys for assignments in eight different areas of the country.

Requirements include admission to the bar and the U.S. Patent and Trademark Office and experience in signal processing, computer systems and programming, digital electronic circuits, semiconductor devices and communications.

IBM already has more lawyers than most clone makers have employees. If you're a clone maker today, I guess you better make sure you are putting as much money into the development of lawyers as you are into chip technology. Anything you can do, I can do faster. In yet another series of benchmarks, Compaq's Deskpro 386/20 proved 33% faster than a similarly configured 20-MHz IBM Personal System/2 Model 80. This particular benchmark, conducted by Workstation Laboratories, measured the systems' respective CPU, I/O and floating-point performance.

So Compaq's the king of benchmarks this week. But its reign will last until the next series comes out. By the way, Altos's 16-MHz Intel 80386based Series 2000 finished third, and Apollo's 25-MHz Motorola 68020-based DN4000 finished fourth.

More to life than SQL. Richard Rabins, president of Alpha Software, recently raised a good point about the industry's preoccupation with SQL and other relatively obscure data base technologies. His point is that instead, the next generation of data base products needs to deliver powerful features — he suggests customized menus and data entry screens — that nonprogrammers can readily understand and use.

This will allow data base users to discover that they can exert the same control over data bases that they have had over word processors and spreadsheets. "It's time for democracy to finally come to the data base world," he says. Good point.

Welcome aboard. Data base jockey Rod Zimmerman has given up Data Base Derby, an application-specific test of data base management system vendors that Zimmerman founded in 1985.

The Derby gathered a host of DBMSs and ranked their ability to develop a complete business application. This test served to raise issues of SQL vs. non-SQL data base effectiveness, with SQL-based systems taking a clear lead in many categories. Instead of helping to runthe SQL race, Zimmerman has picked his favorite horse, Gupta Technologies, at which he now serves as product manager for SQL Base. Ride 'em, cowboy!

Let's get tall. A version of DOS for the visually impaired has been developed that displays letters from ½- to 5-in. tall. Called LP (Large Print) DOS, the program was developed by the manager of data communications at Northeastern University in Boston. The program should eliminate the need for enlarging hardware that restricts access to a single, specially adapted machine.

Let's get small. Mechanical Enterprises introduced an interesting little keyboard recently that takes up about 60% of the desk space used by the standard 101 key units. The vendor has rearranged the keys with the number, cursor and function clusters in front of and elevated from the normal alphanumeric section. Eye scan, head and hand movements are greatly reduced. The keyboard sells for \$150.

Scannell in a Computerworld senior editor, microcomputing.

OLTP fundamentals.



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ON-LINE TRANSACTION PROCESSING is the most demanding discipline in data processing. From small systems to worldwide networks, it requires on-line access to a shared database with full data integrity, full security and no downtime. You must be able to distribute data wherever needed, and it all must operate with the simplicity of a single system you can expand in any increment you choose.

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C5232

Currid

CONTINUED FROM PAGE 37

should think that we will get to a 1-1 ratio within the next two to three years, depending on the way management really sees some of the benefits coming back off of these early networked systems.

What sorts of problems does MIS face on a daily basis?

If you look at the average company, the

people supporting micros or local-area networks or the micro-to-mainframe connection run around with fire drills all day: Sally Sue's printer isn't working. That could consume a number of people in an organization to the point where all they do is put out those kinds of fires, and they never get ahead of the wave.

How are you getting ahead? Networks are helping a lot. We only have one copy of [Wordperfect Corp.'s] Wordperfect per file server to deal with, so when we go to upgrade, or change, or put a new printer driver out or whatever, we only have to go to one place per file server. And because we try to keep ourselves somewhat consistent in our application, we can make it right on one file server and then replicate it to the others in the building. The best example I can give is that it took our company a full year to go from Lotus [Development Corp.'s 1-2-3] 1A to Version 2.01, and it took us an hour to go from Wordperfect 4.1 to 4.2.

Will you lean toward OS/2?

Not yet, but we're trying to get ourselves ready for OS/2. I don't want the hardware platform to get in the way. We don't have any OS/2 applications running, but the minute we see one that makes sense, we

What is your strategy for hooking up micros and larger systems? We've got one of those Labtech installa-

tions, and it is just a connection on the network. It's very high speed and has worked out nicely for us, but we don't have several thousand units on it yet, so I don't know what's going to happen after a while what kind of performance loss that we may see.

Do you have a mixed mainframe environment?

No, we're mostly IBM. We have several data centers around the country, and there may be a Prime [Computer, Inc.] in there somewhere as a minicomputer, but as a mainframe, we're pretty Blue, with different operating systems on different boxes. [We have] one VM, and I think the

Has the memory chip shortage limited what you have been able to buy the last few months?

It's about to. We're just about to open up a new project that is going to be multiple unit purchase, and we've got a deadline to meet for management. If we can't put the file servers together or some of the advanced workstations, we are going to have to look outside of Compaq. That is unfortunate, because the platform is right, the architecture is right, and we know how to slap the boards in. We know how to make this happen, and now the chip shortage is going to get in the way.

What are some of the emerging

technologies you are keeping your eye on?

The big deal for us right now is the connectivity platform. Perhaps the thing that can impact corporations the most today is properly outfitting the professional or mid-level manager with the right workstation. The technology I'm looking at to get us there is the interconnected localarea networks and whatever you hang off the network.

We stopped buying anything but 386s at the end of last year. We're quickly trying to get everybody up on a good platform. And also, we're going to be looking at some of the WORM [write-once read many] technology for special applications.

What LAN are you using?

We're running on IBM Token-Ring hardware and Novell software. We have some Arcnet [networks] and some Proteon in the building, and that's all interbridged to the Token-Ring, with Novell running the layer on top. It's very clean. You don't know when you're passing over a bridge from the Token-Ring side of the network to the Proteon, for example. Just about all of our networks are bridged together, and then everything is bridged into the main-

Where does SQL fit in?

It's fitting into the future. Right now we're using [Advanced Data Research, Inc.'s] Datacomp/DB on the mainframe, and they're coming out with an SQL version. The micro software we look at for data bases is [Microrim, Inc.] R:Base System V, and that has come out with some SQL support. Ultimately, all this stuff is going to meet together in SQL, but that's more a part of the future than it is the

Also, I'm not crazy about the syntax of SQL as being a user-oriented language. That stuff is not easy. There's got to be some front ends to SQL. My feeling is whoever develops the nicest, neatest package will probably win.

But it's really turning the data base in-dustry upside down. We've had the day of the spreadsheet, the day of the word processor, but the day of the data base just hasn't come yet. Yet that's really when you can develop the applications that start paying for themselves.

Show CASE

Smoke Screens

Today, everybody seems to be offering PC-based front-end analysis and design tools. Their makers credit them with provid-ing screens that can drive Computer Aided Software Engineering. We credit them with providing smoke screens. Because once you've created a diagram on the PC screen with one of these, it just sits there—it isn't integrated with any of the other tools you need to get the job done.





Data Bucket

This is some folks' idea of a Central Repository. It doesn't have any particular organization, and it will probably hold most of the data you care to tose into it. But that's about all it will do.

All we can say is, if you're considering a CASE system with a dictionary that looks like this, dump it.

Promises, Promises

Since the makers of ShowCASE products rarely have proven applications to fall back on, they will usually tell you which companies may use their product in the future, show you what your system could look like, or even guess at what your savings might be. Promises, promises.



Powerpoint

CONTINUED FROM PAGE 37

point is best suited for accomplished Macintosh users. But even these users can get stuck. "We get exasperated sometimes. It doesn't quite follow the Mac interface. And there are some slight idiosyncrasies," said Wayne Wilkerson, a computeraided design site manager at Hughes Air-

Despite the problems, you could not pry Powerpoint away from Wilkerson. Hughes does a large number of presentations to management and customers, and Powerpoint has eased the presentation burden a great deal, he argued.

Some of the product's glitches crop up when working with images that have been reduced. "When you are working in smaller sizes - say 50% reduction - if you enter a correction or you line up objects, it never comes out right," said Don Gerue, a programs manager at a large electronics and defense firm.

Nearly all users interviewed followed the same progression. In the past, they used Apple's own Macdraw and Macpaint now produced by Claris Corp. - to generate slides and overheads. Then they moved on to Powerpoint.

'We used [Macdraw] a lot. But if you do a multiple-page thing with [Macdraw], it is tedious. With Powerpoint, you can scroll through the slides and reorder them by names or whatever," said Morris Hermann, project manager with a major electronics and defense firm.

Some of the product's problems will be rectified with Powerpoint 2.0, a version of the package that is currently in beta

If users had their way, Powerpoint would be enhanced in a number of ways, many of which are taken care of with Powerpoint 2.0.

It would be nice to have dynamic data exchange, so you could link presentations to data files. If the data changes, the presentation would be changed automatically," said Frank Agee, a systems engineer at a large West Coast bank.

Other users said they look forward to the planned color support.

Zachmann

CONTINUED FROM PAGE 37

Under those conditions, how likely would you be to invest serious money in the company? How likely do you think most users would be to buy the product? And, how likely would you be to buy it?

Well, if you haven't already caught on to my little joke, the product I've been de-scribing is IBM's OS/2 Extended Edition. Yup, that's it, we're talking about IBM's strategic software product for corporate computing here. This little beauty, mind you, is what your friendly IBM salesperson wants you to buy, so you won't be left out on all of the great new technology IBM's got in store for you.

Monstrous undertaking
If anyone other than IBM tried to propose this resource-hungry limited-function monster, he would absolutely be laughed out of the room. It reminds me of an old monster 1963 Ford Galaxy I once owned with a pathetic little six cylinder engine that looked mighty big and impressive from the outside but took nearly half a minute to get up to 60 mph.

OS/2 Extended Edition, even in the initial version (minus the OS/2 Presentation Manager), which is due out in July, will be such a resource hog that you won't be able to run it on an IBM Personal Sys-

tem/2 Model 50.

The Model 50's glacially slow 80msec, 20M-byte hard disk just doesn't have enough room to put much else on it once OS/2 Extended Edition Version 1.0 arrives. Even if it did, it would run so slowly, that you'd fall asleep waiting for it to do something.

Once the Presentation Manager is added - IBM says in November aren't likely to be very happy with OS/2 Extended Edition's performance on a PS/2 Model 60, either. Practically speaking, you'd better get a 20-MHz Model 80-111 if you really want to make use of OS/2 Extended Edition for any but the most trivial tasks.

Of course, once you've spent well over \$10,000 (maybe closer to \$15,000) for the hardware and software to run OS/2 Extended Edition with a performance level that a normal person would accept, you've still got to deal with a level of functionality that nearly every competing product already on the Microsoft MS-DOS systems market has exceeded for months. Great deal, huh?

Clearly, the experiment with how far people would go in buying a product, just because it has an IBM logo, isn't going to stop with the PC. IBM is going to try again with OS/2 Extended Edition.

Whenever somebody who is trying to sell me something starts directing my attention to the bigger picture, I begin to wonder what's wrong with their products. In the case of OS/2 Extended Edition, it isn't hard to see what's wrong: It is big, expensive, resource intensive and doesn't do much compared with competitive alternatives.

OS/2 Extened Edition will be a real test of whether the IBM logo alone can make a success of a product that otherwise wouldn't stand a chance in its market. It appears to me that IBM is determined to find out whether there is any truth in that claim.

Zachmann is vice-president of research at Interna tional Data Corp.

PACBA SE

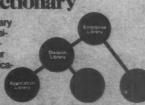


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Proof

Some of the largest companies in the world have been successfully developing cost-effective applications under PACBASE for more than 15 years. Not just any companies, but insurance companies, financial services companies and banks—the major consumers of data processing. Want to see proven results? There are over 550 PACBASE installations worldwide, and nearly 100 in the U.S. alone.

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NEW PRODUCTS

Systems

Data Voice Solutions Corp. has enhanced the Centaur Graphics Terminal, a graphics display unit for use with the Centaur II series of Microsoft Corp. MS-DOS multiuser computer systems.

The terminal is said to allow users to take advantage of the graphics capabilities of MS-DOS programs such as Lotus Development Corp.'s 1-2-3 and Symphony.

The product incorporates a 7.6-MHz graphics coprocessor and 32K bytes of random-access memory. It has a 14-in, amber acreen.

The Centaur Graphics Terminal costs \$699.

Data Voice Solutions, One Newport Place, Newport Beach, Calif. 92660, 714-752-8181.

Convergent Technologies, Inc. has made several additions to its Intel Corp. 80386-based product line.

The Server PC Model 100, an entry-level extension of the 80386-based Server PC series, was designed to support work groups of four to 16 terminal or personal computer users in a Unix environment while also running Microsoft Corp. MS- or IBM PC-DOS applications.

Four models of the Series 386I workstation are the latest additions to Convergent's New Generation series of departmental computing products. All units operate in both CTOS, Convergent's multitasking distributed processing network operating system environment, and in PC- and MS-DOS. Each model is available with 145M- or 325M-byte disk-storage capacity and can support up to 24M bytes of random-access memory.

All products will be sold directly from resellers.

Convergent Technologies, P.O. Box 6685, 2700 N. First St., San Jose, Calif. 95150. 408-434-2848.

Development tools

Intellicorp, Inc. has announced a development version of its artificial intelligence-based Knowledge Engineering Environment (KEE) software for Intel Corp. 80386-based personal computers. The software is a complete implementation of the existing KEE system and will allow user development of knowledge-based systems in the 80386 environment.

The KEE development system for the 386 has an introductory price of \$9,900. The list price will be \$15,000.

Intellicorp, 1975 El Camino Real W., Mountain View, Calif. 94040, 415-965-5500.

TLB, Inc. has upgraded its integrated accounting software package, Solomon III. Version 5.0 has been structured to support a windowing interface, a graphic command bar, menus and enhanced reporting options.

The package consists of 15 integrated modules, including General Ledger, Accounts Payable, Accounts Receivable and Payroll components. The software runs under Microsoft Corp.'s MS-DOS operating system on the IBM Personal Computer, PC XT, AT, Personal System/2 and compatibles. It requires at least 512K bytes of random-access memory and a 10M-byte hard disk drive.

Individual Solomon III Ver-

sion 5.0 modules cost from \$195 to \$995.

TLB, P.O. Box 414, 1218 Commerce Pkwy., Findlay, Ohio 45839. 419-424-0422.

Software utilities

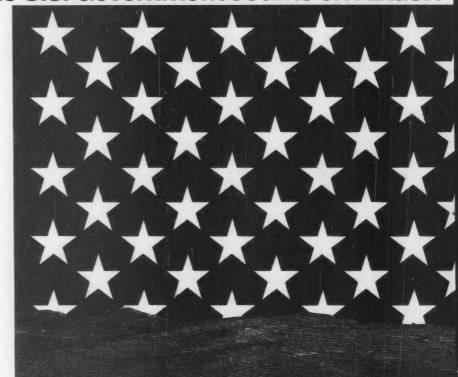
An image decompression package for IBM and Microsoft Corp.'s OS/2 operating system has been introduced by Ad-

vanced Graphics Applica-

Called Agaview, the product allows users to simultaneously view, retrieve, size, scale or expand any number of stored bitmapped images, such as business forms or graphic illustrations.

The software can run on any OS/2 machine in stand-alone mode or can be integrated with Microsoft MS-DOS-based local-

The U.S. Government counts on Nixdorf



The U.S. Census is so vital to our system of government that our Founding Fathers enshrined it in Article I, Section 2 of the Constitution. To be sure, the members of the Convention never envisioned a nation of 245,000,000. The Census of 1790 enumerated only 3,929,214 of us – fewer than the current population of the State of Washington.

Today, the Census Bureau employs Nixdorf systems to help with the count. The Social Security Administration also uses Nixdorf systems, as do state and county governments in Florida, Texas, New Hampshire, Illinois, and Utah.

Nixdorf systems help to run City Hall, to clear court calendars, and run state lotteries.

In an effort to speed-up emergency services, cities around the world now rely on Nixdorf computer automated systems to dispatch ambulances, police, and firefighters, to automatically locate the available equipment and crew for the specific emergency, determine the most expeditious routes, and alert the dispatchers to known hazards, pre-plans, and routing directions. Nixdorf systems buy precious time and allocate manpower and equipment with maximum effectiveness, saving countless lives.

area networks

Agaview costs \$500. Advanced Graphics, 90 5th Ave., New York, N.Y. 10011. 212-337-4200.

Data storage

Archive Corp., a manufacturer of quarter-inch cartridge tape drives, has announced a 20Mbyte version of its Archive XL

Archive XL 20 is compatible with the industry-standard QIC-40 format.

The product is available in an internal 51/4-in. form factor or a 3½-in. unit for IBM Personal Computers, PC ATs, XTs and compatibles and for Compaq Computer Corp. computers. Backup and restore functions are said to be performed at a speed of up to 2.4M byte/min.

The Archive XL 20 costs \$329

Archive, 1650 Sunflower Ave., Costa Mesa, Calif. 92626. 714-641-0279.

A fault-resistant add-on storage array subsystem designed for the IBM Personal Computer AT, Personal System/2 and compatibles has been announced by Pac-

The product was designed for high-volume transaction-oriented applications and high-speed access to large data bases and as add-on memory for network file servers.

The Integra I incorporates as many as six 31/2-in, fixed disk drives that operate independently. It is housed in a single AT-size cabinet. Maximum storage capacity is 600M bytes. Disk drives used in the subsystem can have either 40M- or 100M-byte capacities. Tape cartridge backup is available on all models

The Integra I costs \$2,850

for a 120M-byte configuration.
Pacstor, 983-B University
Ave., Los Gatos, Calif. 95030. 408-395-8804.

Storage Concepts, Inc. has developed a disk system with a reported transfer rate of 18.6M byte/sec.

The Concept 41 Winchester Disk Drive Subsystem offers a 16-bit data bus with burst capacity of 20M byte/sec. Other features include error detection and data correction on headers.

The system is linked to a host processor by single-card host adapters. Buses supported include the Q-bus, Unibus, VMEbus and Multibus. Driver support is available for the Digital Equipment Corp. VMS, croVMS, Unix and IBM PC-DOS operating systems.

Storage Concepts, 1622 Deere Ave., Irvine, Calif. 92714. 714-852-8511.

Printers/Plotters Peripherals

QMS, Inc. has introduced a desktop laser printer for electronic publishing environments that requires a multiuser, networked output device.

The QMS-PS 1500 combines a 15 page/min Ricoh Corp. 4150 print engine with an internal Adobe Systems, Inc. Postscript controller.

The controller is driven by a 16.7-MHz Motorola, Inc. 68020 multiprocessing unit and comes standard with 4M bytes of random-access memory, 1M byte of read-only memory and 35 Postscript typefaces

The QMS-PS 1500 costs

QMS, One Magnum Pass, Mobile, Ala. 36618. 205-633-4300.

An Adobe Systems, Inc. Postscript upgrade kit, now available from Qume Corp., reportedly provides full Postscript desktop publishing capabilities for Qume Laserten and Laserten Plus printers.

Scripten includes a 10 page/ min speed, 300 dot/in. resolution, 11 type families and 35 resident fonts. The upgrade has 3M bytes of memory and a 5,000 page/month duty cycle.

Interface compatibility extends to the Apple Computer, Inc. Macintosh, the IBM Personal Computer through Appletalk, RS-232 serial ports and Genicom Corp. Centronics parallel ports. Hewlett-Packard Co. Laserjet Plus emulation is also available.

Scripten costs \$2,995. Qume, 500 Yosemite Drive, Milpitas, Calif. 95035. 408-942-4000.



Nixdorf has been successful with governments because we are responsive to their need for total solutions, software portability, and investment protection.

Nixdorf Targon, based on the UNIX® Open system, now allows governments to tie existing and future systems together, improving utility and efficiency, and protecting tax-funded investments.

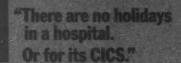
Nixdorf's newest product for government is a truly computerized voting booth with a 25-inch, easy-to-use touch screen. It uses no paper, can be immediately updated, and makes voting easier.

Most important, it makes every vote count. Which is what the Founding Fathers had in mind when they came up with the census in the first place. **Nixdorf Computer Corporation** 300 Third Avenue, Waltham, MA 02154

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where every second is important. Status is everchanging. Everyone needs the latest information. Admissions. Nurses' stations. Labs. Surgery.

That's why UCIA chose The Monitor For CICS to manage CICS performance at its computer center.

"What initially attracted me to The Monitor was the fact that it made it easy for operators to look at medical application and terminal regions," remembers Jerry Johnson, supervising CICS programmer.

"We're running about 450,000 transactions/day and still maintaining half-second response times."

"I especially like The Cross System Monitor, which runs independent of CICS. It gives us the ability to monitor multiple regions on u single screen. Those graphic displays nicely capture the resource utilization information I need to see during the day. It saves me time—I catch problems before they get big. Best of all, our users get optimum CICS performance."

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NETWORKING



EDI: Handle with care



Final installment in a twopart series on EDI planning issues.

All those who have so far embraced electronic data interchange (EDI), with the exception of a few large pioneering suppliers, have either done so with reluctance or have been dragged kicking and screaming to the party by key accounts. But the times, they are a changin.

There's a change in attitude sweeping leading-edge companies — and even a few on the blunt verge are beginning to approach EDI with the belief that if they can implement it this year, instead of next year, they'll be in a better competitive position. If they can cut the cost of goods sold and reduce order turnaround, then customers will want to deal with them.

In short, the sooner the switch to EDI, the better. That's good news, because it eliminates at least one major hurdle to launching an EDI system — gaining internal support. But you'll need a lot more than enthusiasm to reap EDI's rewards.

Once you've organized your task force, determined your needs, standardized on a specific technology and selected your vendor(s) [CW, May 16] — think small.

Even with the support of senior management, MIS and the affected departments, no one is Continued on page 50

AT&T rollouts get big yawn

Inept marketing reportedly fails to take advantage of Starlan strengths

BY PATRICIA KEEFE

ANALYSIS

AT&T's voluminous outpouring of products at Comdex/Spring '88 two weeks ago has so far failed to impress. The network-oriented cascade is depicted as catch-up, ho-hum products that will do little more than expand AT&T's capabilities in the proper, predictable directions.

Among the products announced were speedier versions of AT&T's Starlan network hardware and network software, bridges between local and geographically dispersed 1M- and 10M-bit Starlans, ISO Open Systems Interconnect compatibility, network management capabilities, a network hub, links to competitive office systems and enhanced 3B2 connectivity.

Not only is there a consensus

of "too little too late," but many AT&T watchers seem almost more interested in the telecommunications monolith's ability, or lack thereof, to sell data connectivity.

Gotta move the product

AT&T needs a sales force dedicated to local-area networks to make a serious dent in that market, according to Marty Gruhn, a principal with Tempe, Ariz,-based Sierra Group. She said AT&T has considered attacking networks as a separate, distinct market.

But AT&T is stymied by its lingering telephony mind-set and does not understand data networks, claimed Clare Fleig, director of research at the International Technology Group in Los Altos, Calif. "They have an inability to get their act together." Gruhn agreed, adding that AT&T "is a profile of a company

that can't get out of its primary market."

Long a criticism directed at AT&T's computer group, concerns about inept marketing are not helped by the departure of Data Systems Group head Vittorio Cassoni, who left AT&T to rejoin Ing. C. Olivetti & Co. Cassoni was replaced by former AT&T Chief Financial Officer Robert Kavner.

Despite Kavner's and Cassoni's efforts to assuage concerns about AT&T's continued participation in the computer market, a number of analysts and former AT&T employees maintain that Kavner knows very little about computers. More important, he is seen as a "green shade" who is not likely to look favorably on AT&T's thus far unspectacular network showing.

Despite being first to market with the 1M-bit Starlan in 1985,

Continued on page 46

BY PATRICIA KEEFE CWSTMF WASHINGTON, D.C. — A local reseller, armed with assistance mer from an international carrier and idea a local-area network, has developed a worldwide messaging system for the Soviet Embassy's information office that not only

Soviets

link with

local seller

cut costs but also improved transmission reliability.
For the past 20 years, Ing. C. Olivetti & Co. has had a lock on a worldwide account with Novsti, the Soviet Press agency, according to David Pales, president of Ansat, Inc., an Olivetti dealer here. But locally, Novsti is serviced by area Olivetti dealerships like Ansat.

Pales was called in to link the information departments — mainly press and public relations — of the Soviet Embassy here with similar Soviet offices in New York and Canada.

The embassy faced a number of significant problems with its international communications system, both from a processing point of view and in terms of the quality of communications.

Messages sent between Moscow and Washington tend to consist of long articles. "It is not uncommon in this type of situation to experience substantial breaks in the communications," Pales said, adding that telex systems

Continued on page 50

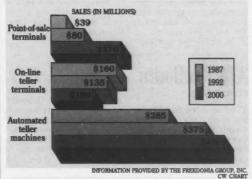
Inside

- Tandem to unveil supernode switch. Page 46.
- MCI links into X.400. Page 48.

Data View

Mixed future for electronic banking

By the turn of the century, on-line teller terminal sales are
predicted to dip, while POS terminals take an upswing



MIS eclipses telecom star

BY PATRICIA KEEFE CW STAFF

MARLBORO, Mass. — Although a major budget item and an area of strategic significance, communications appears not to have achieved a corresponding status within the organization.

Even given the separation of communications and data processing in many organizations, budget control still rests largely in the hands of the MIS department, according to the results of a recent study.

Published by The Market In Continued on page 48

Advice on Integrating IBM, DEC, HP, & Unisys Networks



Forest Computer Report on Multivendor Networking This report published by Forest Computer discusses networking solutions for multiple vendor environments. In it you will learn about:

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- Methods for using a multivendor network to reduce networking and computer costs.
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Tandem to unveil supernode switch

BY J. A. SAVAGE

CUPERTINO, Calif. - Tandem Computers, Inc. plans to make inroads into the "virtual" phone number market with switching technology slated to debut this summer.

The switches are said to use Tandem's high-end fault-tolerant hardware in combination with software supplied by Tandem Telecommunications Systems, Inc., formerly Integrated Technology, Inc., a Plano, Texas, firm recently acquired by Tandem. The software is called Service Control Point (SCP), a network interface, and Service Management System (SMS), a master data hase

The technology is referred to "supernodes," which aim to off-load processing from phone company switches, allowing customer services to be available on

Telecommunications is the fastest growing sector of Tandem's on-line transaction processing business, the vendor Bruce Dougherty, Tandem's telecommunications director, said he does not expect to see an impact from the phone service products until 1990, when production ramps up.

Stiff competition

But by that time, Tandem will be competing with IBM and Digital Equipment Corp. in the supernodes market, according to Steve Sazegari, an analyst with San Jose, Calif.-based Dataquest, Inc.

He said he expects the phone companies to install "one or two" of these types of systems in about 10% of the 19,000 central offices nationwide.

Tandem's telecommunications system should have its first SMS customer this summer. Tandem declined to identify the



Tandem's Dougherty

Tandem's Nonstop VLX mainframe supports the SCP software. The computer starts with two processors and can be expanded to 16.

An entry-level, short-term front-end processor, called a PMX, is now available to process 100 transaction/sec. for simple information access such as credit card authorization.

A processor featuring a DEC VME bus capable of 400 transaction/sec, is scheduled to be available this summer.

Yet a third processor in the planning stages, informally called the Signaling Terminal, is expected to double or triple that throughput.

"Once the [SCP] is in place, on top of it you can put in a virtual private-line network, billing validation, voice store-and-for-warding and/or electronic mail," Dougherty said. However, the telephone companies will have to write their own applications for these functions.

These applications and others will run on turnkey systems that off-load the intelligence from phone company switches, transferring it into the SCP software, Dougherty said. "The switch is then optimized to protect itself - making sure it's up all the

Pricing will be determined on per-processor charge. The software platform will also be available in incremental charges.

Rabbit adds IBM link, board

BY PATRICIA KEEFE

ATLANTA - Rabbit Software Corp. recently announced a co-axial link to IBM mainframes and an add-in board set for IBM Personal Computers, PC XTs, ATs and Personal System/2 Models 25 and 30.

Release 5.0 of Rabbitstation Coax, a control unit terminalmode coaxial host connection. reportedly adds various levels of IBM 3278 and 3279 emulation

Rabbit already provides distribution function terminalmode access.

Bundled options

The following options come bundled: IBM's IND\$FILE filetransfer program, IBM-compatihigh-level Language Applications Program Interface (API) 1.0, a low-level API interface support and Rabbitscript.

Other features include a coaxcommunications adapter, complete documentation and either three 51/4-in. floppy disks or two 31/2-in. floppies for the PS/2s, according to the compa-

Release 5.0 costs \$1,095. Current users of Rabbitstation Coax and Micro Plus, Inc.'s MP01 Coax can purchase an upgrade for \$250.

The Rabbitcluster board set reportedly combines the capabilities of a 3270 coaxial cluster controller and an ASCII protocol converter into one twohoard add-in set

This enables a micro to provide both coaxial and ASCII cluster controller functions without any impact on performance, according to the company.

Other features include an inboard processor and memory, support for up to 16 attached devices, including 3270-type devices, 3270/ASCII protocol con-3299 terminal versions, multiplexer support and a passive coaxial demultiplexer.

Future plans Rabbit said future enhancements will include local-area network gateway support, distributed controller functionality across PCs on local-area networks, support for IBM's LU6.2 protocol and CCITT X.25 capa-

Pricing starts at \$2,390 for the two-board set.

Users can purchase separately the host interface processor board or the coaxial interface board for \$1,195 each, according to the company.

Hyperchannel series connects cross-vendor networks

BY JAMES DALY

MINNEAPOLIS - Network Systems Corp. firmly planted its feet in the multivendor connectivity world recently with the introduction of an array of crossvendor networking products.

The company's Hyperchannel-DX offering includes the new N130, which reportedly connects a Crav Research. Inc. supercomputer to a Hyperchannel-DX network using Cray's fullduplex 100M bit/sec, channel.

Network Systems also announced the N220, said to support any IBM or plug-compatible processor with a Federal Information Processing Standard channel, and the N400, which supports any minicomputer or workstation with a direct memory access channel. The new N700 connects one host computer or four networks with up to two high-speed T1 telephone

Network Systems Chairman James E. Thornton said the introductions represent a new strategic direction for the data communications products mak-

"Network Systems has [spent] the past decade connecting a wide variety of computer and operating systems at high speed, mainly for large computer users," he said. Meanwhile, lower speed, single-purpose networks have proliferated, using different protocols and media, he added. It is precisely this market that the additions to the Hyperchannel series will address.

The Hyperchannel-DX products are built around a central nucleus consisting of a 16-MHz Motorola, Inc. processor, a central shared memory of between 1M and 16M bytes and a backplane bus operating at 400M bit/sec. that can accommodate up to 15 processor boards, the vendor said.

This hardware base is complemented by dedicated host and media interfaces, each of which has its own bit-slice processor and program memory. Multiple hosts and multiple networks reportedly can be connected to a single Hyperchannel-DX unit.

The company claimed the Hyperchannel-DX line allows networked computers to move data at up to 100M bit/sec.

In addition, Network Systems claimed the units can handle up to eight concurrent sessions even between different networks using different protocols or mediums.

The products support traffic over twisted-pair, coaxial and fiber-optic cable, as well as industry standards such as Ethernet, Transmission Control Protocol/ Internet Protocol and the emerging Fiber Distributed Data Interface, the vendor said.

The units are fully compatible with existing Hyperchannel-50 and Hyperchannel-10 products, as well as with Network Systems' IP Router, which connects Ethernet-based networks with a

mainframe or supercomputer.
Prices for Hyperchannel-DX units range from \$30,000 to \$100,000 and will be available in the fourth quarter.

EDI book goes international

DALLAS - EDI, Spread the Word, publisher of the EDI Yellow Pages, has reached an exclusive agreement with Euromatica SA to provide the first international directory for electronic data interchange (EDI).

Brussels-based Euromatica currently publishes Who's Who and What's What in Electronic Data Interchange. The two publishers plan to merge their directories and provide free distribution to all listed companies.

Set for late August availabil-

ity, the combined Edition III will contain 5,000 to 6,000 listings, a glossary, implementation tips and an international EDI calendar, the publishers claimed. Edition IV is slated for early 1989.

A joint proposal for consulting is under way. The firms also agreed in principle to cooperate on other EDI products.

More information is available from the U.S. publisher at Suite 100, 13805 Wooded Creek Drive, Dallas, Texas 75244. 214-243-3456.

AT&T rollouts

FROM PAGE 45

AT&T has never really capitalized on what was then the only network of consequence that ran over unshielded twisted-pair cabling. Starlan's impact was quickly blunted by a triple whammy consisting of a muddy marketing campaign; the announcement of IBM's Token-Ring network, which also runs over telephone cable; and a rash of cheaper Starians.

There have been rumors off and on for two years about a 10M-bit Starlan running over ordinary telephone cable, but by the time AT&T delivered, it was already late to the party. Gruhn said "10M-bit Starlan [technologyl hasn't been news for some time." Ethernet pioneers 3Com Corp., Digital Equipment Corp., Synoptics Communications, Inc. and Hewlett-Packard Co., among a number of other firms, have already released similar products or indicated plans to do so once IEEE's 10BaseT study group settles on the specifics of the standard.

Still, the picture is not totally black, according to Brad Baldwin, an analyst at Dataquest. Inc. He said 10M-bit Starlan is just gaining momentum due to greater user awareness and the emergence of a standard, adding that "AT&T should be able to step in as a major player." But others have wondered whether AT&T will miss this boat, too.

As for IBM's Token-Ring, AT&T seems to have finally confirmed a 4M-bit token-ring offering slated for delivery early next year. By then, IBM is expected to have shipped its 16M-bit Token-Ring hub and will be busy readying the release of a 100Mbit version. Don't forget that AT&T is the company that allegedly had a competing patent on token-ring technology and had the foresight to sell its rights to the current sole patent owner, Willemijn Holding BV of Rotterdam, the Netherlands.

The bottom line today for AT&T watchers, ever mindful of past disappointments, is whether AT&T networking will play in the Fortune 1.000.

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RIT RLAST

ACC tool networks MVS, TCP/IP

Santa Barbara, Calif.-based Advanced Computer Communications (ACC) recently unveiled Version 2.1 of its Acces/MVS software said to link IBM mainframes running MVS to Transmission Control Protocol/Internet Protocol (TCP/IP) networks. Enhancements include operation with IBM security facilities, such as MVS System Authorization Facility, and with the IBM Continuously Executing Transfer Interface (CETI) protocol to provide higher throughput between IBM hosts and TCP/IP environments. Version 2.1 costs \$17,000 for the basic software and \$22,000 for Acces/MVS with CETI support. Also, ACC announced that Intel Corp. will resell Acces/MVS with its Fastpath control unit to users who want to link IBM mainframes to an Ethernet net-

Willemijn Holding BV in Rotterdam, Netherlands, has granted three licenses for its patented token-ring technology to L. M. Ericsson in Stockholm, Proteon, Inc. in Natick, Mass., and Micom Systems, Inc. in Simi Valley, Calif. Thirty licenses have already been granted.

On June 6, Southwestern Bell Corp. said it will flip the switch on the first domestic large-scale Integrated Services Digital Network (ISDN) service. Houston-based Tenneco, Inc. will put the first of 5,000 ISDN lines into service next week, cutting over 900 lines by the end of June and another 3,500 by year's end.

ACS Network Systems has joined IBM's Industry Marketing Assistance Program and will supply IBM Information Services Network customers with electronic data interchange (EDI) software for the IBM System/36 and 38 computers. ACS also announced a joint-marketing deal with Control Data Corp. System/36 and 38 users will gain access to Control Data's Redinet services via ACS's EDI/36 and EDI/38 software.

Tandem Computers, Inc. in Cupertino, Calif., has agreed to resell Netlink, Inc.'s SNA Hub to Tandem users. The pact enables Tandem to connect its Nonstop systems with IBM's Systems Network Architecture. Tandem owns an equity interest in Netlink, which is located in Raleigh N.C.

Cincom Systems, Inc. in Cincinnati and Japan-based Fujitsu Ltd. have signed a technical cooperation agreement that reportedly will ease conversion of Cincom's Supra relational data base management system, Mantis application development software and Netmaster network management package to the Fujitsu environment.

Dallas-based International
Communications Association (ICA) is offering T1 network training at its third-annual
summer program June 19-24.
The University of Colorado at
Boulder seminar costs \$900 for
ICA members and \$1,000 for
nonmembers. Registration

deadline is today.

The Rederal Communications Commission last month formally withdrew its highly controversial proposal to raise the access charges for value-added networks by about \$4.50 per hour. The FCC said it has abandoned the idea because the higher charges would disrupt the enhanced-services industry, which already faces substantial regulatory changes under the Open Network Architecture scheme and modifications to the AT&T divestiture order.

AT&T will waive nonrecurring charges for installation of AT&T international 800 telephone service for orders placed through Sept. 30 and for services installed between April 4 and Dec. 31, 1988. Waived charges include the standard \$99 service-order charge, which covers AT&T international 800 service from one country; the \$99 access capability charge for each additional country; and the \$175 installation charge for each access line.

Two guides are available for users eager to fathom host connectivity. A Guide to Advanced 3270 Micro-Mainframe Connectivity is available free from Attachmate Corp. The booklet explains how to use the extended features that are available under the current generation of micro-to-mainframe software. Topics include CUT vs. DFT protocols, multiple mainframe sessions, file

transfer alternatives and printer emulation, a glossary and a checklist of product evaluations.

A second booklet, IBM Mainframe Connectivity for PC LANs, is offered free by Lata Interface Systems Corp. The guide is "heavy on buzzwords and practical definitions and light on formal definition and precise shadings of technical esoterica." The focus is not on asynchronous terminal emulations or links to minicomputers. It addresses, instead, IBM's Systems Network Architecture and Synchronous Data Link Control, 3270 systems and IBM's Systems Application Architecture.

Gateway Communications, Inc. said it has released a high-speed gateway for Novell, Inc. Netware-based local-area networks. The \$1,695 G/X25 gateway is said to allow connections into mainframes, minicomputers and personal computers through public and private packet networks.

Responding to the "doublecharging" problem faced by EDI users, McDonnell Douglas Network Systems Co. said it will offer its customers a no-cost gateway service into other public EDI networks as of Aug. 1. A McDonnell Douglas EDI Net user can internetwork with a user of another EDI network for exactly the same fee it costs to communicate with another EDI Net mailbox. Also, the new policv for EDI Net customers will discount the delivery of EDI messages via another public network by 33% and will discount the receipt of similar messages

MCI latches onto X.400 bandwagon

RYE BROOK, N.Y — MCI Communications Corp. jumped aboard the X.400 bandwagon last week with its announcement of MCI Mail Xchange 400, an X.400 gateway for MCI Mail.

Scheduled to be available in July, the product was demonstrated at last week's International Communications Association conference, which was held in Anaheim, Calif.

Xchange 400 reportedly offers MCI Mail customers the ability to exchange messages with interconnected private and public electronic mail systems conforming to CCITT X.400 recommendations.

The gateway reportedly provides users implementing private X.400 systems with access to all MCI Mail delivery services, including electronic, telex, postal and courier deliveries worldwide.

Xchange 400 is also fully integrated with MCI's links to personal computers, local-area networks and office automation systems.

Xchange 400 is based on Digital Equipment Corp.'s Message Router X.400 and Open Systems Interconnect-based networking technology. MCI said it will price the ser-

MCI said it will price the service based on standard messaging rates and the basic packetswitched transport charges required for access to Xchange 400.

MIS eclipses

formation Center, Inc., the study is based on responses from public and private-sector organizations in which the average communications budget approaches \$12 million corporatewide vs. about \$2.5 million for individual sites.

Responses to budgeting questions depicted a strong role for MIS. In a little over one-third of the 584 sites surveyed, the communications function reports to the MIS department. Nearly 60% said that their budgets were either partially or fully administered to by the MIS department. The remaining 41% have more autonomy in handling their own budgets.

The study, called "Telecommunications Organizational Structures," also found that the larger the organization, the less likely the person responsible for communications would sport an executive-level title.

Almost half the local, or individual site, communications department heads, along with 40% of their companywide compatriots, carry a title that is a variant of coordinator, supervisor or manager.

This does not compare favorably with typical MIS titles, such as vice-president or director.

Staffs linked

In addition, a number of firms, including some with very large communications budgets, said they do not have a separate communications staff, distinct from MIS/DP. Of 36 firms that do not separate staff by function, 10 are spending upward of \$1 million in all U.S. locations, and four of those are spending in excess of \$5 million, the report said.

At companies in which dedicated communications staffs exist, they tend to be small. Overall, these employees represent a mere 1.6% of the total technical staff at the sites surveyed. The average number of communications staff employees is 21 at the site level and 125 at all U.S. locations, although the medians are considerably smaller, at four and six, respectively.

Despite these patterns — which might lead some to conclude that the communications function is not valued within the Fortune 1,000 — study respondents thought senior management has a high regard for communications.

On a scale of 1 to 5, with 5 being the highest, the average communications manager placed the value of connectivity to upper management at 3.4, with the most common score being 4.

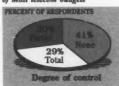
Even so, there seems little doubt that MIS remains closer to the heari of the executive office.

When comparing the communications function with MIS/DP, only 10% of the sample suggested communications was of more value to senior management. The majority, 47%, said the two capabilities were valued equally, while 43% claimed MIS/DP is more highly regarded.

More than two-thirds of the study's respondents had multisite environments linked by expensive corporate voice/data networks.

The study also examined reporting structures, staffing levIn control

A survey of 600 firms shows that MIS oversees at least some part of most telecom budgets



INFORMATION PROVIDED BY THE MARKET INFORMATION CENTER, INC. CW CHART

els, budgeting practices and service and maintenance issues.

About 85% of the respondents said their communications function was handled centrally by senior-level management, making major decisions concerning enterprisewide networking strategy.

Not surprisingly, the report found that both service and network management expenditures are expected to increase as a percentage of the communications budget in the next three to five years. Network management consumes, on average,

17% of the budget, with 22% of the sample indicating those expenses form more than 25% of the communications allowance.

Despite difficulties in finding skilled personnel, 37% of the respondents said they expect to meet their increasing service needs by adding staff. A roughly similar number want to increase the support they get from product and service vendors, with the rest looking to third-party suppliers. However, a recent report focusing on user service and maintenance concerns [CW, May 2] indicated that it is difficult to obtain reliable service and support outside the company.

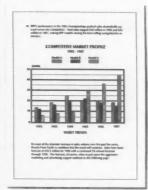
Perhaps due in part to these concerns, the survey respondents overwhelmingly predicted that managing communications will become more difficult during the next three to five years. Increasing technological complexity topped a long list of reasons, followed by network growth and organizational issues. User demand was not a major factor, nor were deregulation or divestiture seen as sources of future difficulty.

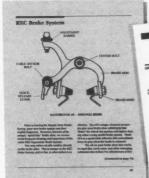
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Keefe

FROM PAGE 45

going to back a cold-turkey, gut-wrenching overthrow of the current paper transaction system. So most consultants recommend picking one activity or department as a pilot site. Microcomputer-based EDI systems can be had for \$3,000.

The EDI task force can then go to upper management and document how and where they were able to save thousands of dollars.

Think long-term when evaluating that pilot. Which EDI solution can be most easily integrated into your enterprisewide system? Most EDI today is done bisynchronously, according to David Taylor, a program director at the Gartner Group in Stamford, Conn. Conversely, 70% of corporate networks are IBM Systems Network Architecture (SNA), which is synchronous. "So the real issue is, How quickly can the EDI vendor support SNA?" Taylor says.

Further easing integration are a number of application software vendors, among them McCormack & Dodge and Management Science America, that are building EDI translators and communications software into their products, Taylor adds.

Whether you're dealing with a pilot or a full-blown implementation, there are number of technical issues lurking below the surface.

Until an EDI system demonstrates 100% reliability, Taylor strongly advises running the electronic system in parallel with manual procedures. "This is not some kind of electronic mail system; you are messing with the fundamentals of the business." His point is well taken.

What if?

While EDI consultants such as Thomas Nolle, president of Haddonfield, N.J.-based CIMI Corp., see few if any problems with receipt of EDI messages, what if there was a problem?

Many on-line transaction processing systems include some form of store-and-forward processing. Taylor points to the X.400 standard or IBM's SNA Distribution Services, or SNADS, as two examples. But Nolle estimates less than 10% of EDI users are capable of receiving X.400 messages. He also doubts whether most inventory or accounting systems have any reason to interface with a document exchange system such as SNADS. Nevertheless, Taylor notes that fault-tolerant system vendors are beginning to appear at EDI shows.

Security is another issue. Financial institutions use verification, a form of encryption. This not only protects the message from alteration but also makes sure that no one intercepting the transmission can read it. Another route is authentication, which is essentially an electronic signature.

Finally, both Nolle and Taylor agree that the biggest problem likely to face EDI users is neither message transmission not receipt, but rather responsibility issues.

Trading partners need to hammer out who is responsible for inadvertent mistakes in orders. If you mistakenly order 100 cases of grapefruit vs. the 10 you need, are you stuck with the order?

This is by no means an exhaustive list of EDI pitfalls, but it should provide some food for thought.

Keefe is a Computerworld senior editor, networking.

Soviets

FROM PAGE 45

were not designed to handle long messages.

The embassy experienced problems with its packet network-based MCI Mail service from MCI Communications Corp. 'It just did not work, because lines went down in the middle of the message, resulting in a considerable amount of revenue generated by the customer in order to retransmit.'

Ansat designed a telex network working closely with international carriers such as MCI International. Ansat's replacement for MCI Mail uses MCI International's mix of hard-wire cable, transat-lantic cable and satellite service. "Traffic [on this network] is a more reliable service [than a packet network], which basically provides an automatic transmission of several thousand messages at once to hub locations for redistribution," Pales explained, referring to MCI Mail.

To reduce costs and improve the quality of data transmission, Ansat built a personal computerbased telex network, using 10Net Communications, Inc.'s 10Net network. Unlike most telex approaches, an attendant is not required, and messages are accessible on the LAN.

Messages sent via satellite are captured on the communications server, or telex, and are transferred to the network file server. Ansat wrote the necessary programming instructions for this as part of an overall network program it designed.

The 15-node network consists of Olivetti's Intel Corp. 8086-based processor as the file server, featuring two large disk drives for redundant processing, and another Intel 80286-based communications server.

Ansat considered Novell, Inc.'s Netware network operating system but rejected it for two reasons: distribution and simplicity. Since Olivetti resells 10Net, it can provide good support for the network worldwide, Pales reasoned.

"Considering that the system will be installed worldwide [at other embassy press offices], we wanted to use something simple," Pales said. 10Net is Microsoft Corp. MS-DOS transparent, he said, claiming that Novell is not. Also, a Novell network installed in another country reportedly does not work as well as the system Pales installed.

Pales said he expects local Olivetti dealerships around the world will tend to the local embassy's network. "Our primary coverage is Washington, D.C., although we provide Moscow directly with software support, design assistance and communications procedures."

For example, during last year's summit between the U.S. and the Soviet Union, Ansat's network interacted with Moscow on an almost hourly basis in terms of worldwide communication. It also helped produce several publications on the summit. And in December 1987, the network sent out several thousand messages daily over MCI International. "We were in constant touch with different embassy offices around the world, verifying what they had received or transmitted," Pales recalled.

NEW PRODUCTS

Local-area network hardware

A series of intelligent data switch products that provide connection for RS-232 devices has been announced by Quasitronics. Inc.

The Q-8000 has eight bidirectional, individually addressable asynchronous ports and up to 1M byte of memory. The switch allows computers to share a laser printer, a plotter, a modem or other asynchronous peripherals.

The Q-8010 and the Q-8020 include two synchronous RS-232 ports in addition to the eight asynchronous ports and 256K bytes of memory. The Q-8020 performs all necessary protocol conversion.

The Q-8000, Q-8010 and Q-8020 cost \$795, \$1,295 and

\$995, respectively.
Quasitronics, 211 Vandale
Drive, Houston, Pa. 15342. 800245-4192.

Datagram Corp. has reportedly enhanced its DM408 Steamer, a product that enables users to configure local-area networks in a triangular topology.

The company defines triangu-

lar topology as having three different sites interconnected via three different circuits. In the event that one network goes down, the user can choose an alternate path on either of the re-



Datagram's DM408/T

maining two, the vendor said.

The DM408/T, which is currently shipping, uses a proprietary compression algorithm for traffic load reduction on data circuits.

The DM408/T costs \$1,100. Datagram, 11 Main St., East Greenwich, R.I. 02818. 401-885-4840

Local-area network software

A communications software package that features network modem pool management, CCITT X.25 access, user-defined terminal emulations and installable protocols has been re-

leased by Quantum Software Systems, Ltd.

The Qterm Communications Package includes an interpreter for the QNX language that allows programmers to write scripts that can automatically perform operations on a remote system.

The Qterm Communications
Package costs \$150 for a nonnetworked version.

Quantum, 175 Terrence Matthews Crescent, Kanata, Ont. K2M 1W8. 613-591-0931.

Network management

ADC Telecommunications, Inc. has announced NUMARC, a network utilization monitoring, alerting, reporting and control console. The product is said to be especially suited to multivendor environments.

The system includes a Microsoft Corp. MS-DOS-based color control console and rack-mounted hardware for reporting and storing statistics. NUMARC interfaces with the network on the physical level and is transparent to speed and protocol.

NUMARC costs \$28,000 for a 1,000-line system and is available in different configurations.

ADC, 4900 W. 78th St., Minneapolis, Minn. 55435. 612-835-6800.

Links Whit

CF Software, Inc. has announced PC Mainframe 3.0, an intelligent micro-to-mainframe link. New features include a scripting facility for terminal emulation, conditional logic and automated operation of all IBM

3270 functions.
PC Mainframe 3.0 is available at no charge to customers who have paid current maintenance fees. The package is priced at \$7,500 for IBM DOS/VSE sites and \$10,000 for IBM MVS sites.

CF Software, Suite 201, 2454 E. Dempster, Des Plaines, Iowa 60016. 312-824-7180.

White Crane Systems, Inc. has announced Version 2.0 of the Brooklyn Bridge file transfer utility. The upgrade adds a dual directory display file manager and a menu system to the product, and it includes four DOS utilities.

The Brooklyn Bridge allows users to transfer data between IBM Personal Computers and compatibles and permits access to printers, plotters and tape backup systems. A version is available that supports the Data General Corp. DG One laptop, the vendor said.

Version 2.0 costs \$139.95 for the IBM or DG versions and

\$199 for the Victor 9000.

White Crane, Suite 151, 6889 Peachtree Industrial Blvd., Norcross, Ga. 30092. 404-394-3119.

Security

Pulse Data Systems, Inc. has announced two software products for ensuring data communication privacy in the personal computer environment.

Secom was designed for point-to-point communications and allows file transfer and remote operation. Based on the Data Encryption Standard (DES), the package is menudriven and provides Digital Equipment Corp., IBM or Televideo Systems, Inc. terminal emulation. Secom runs on the IBM Personal Computer, PC XT, AT or compatibles.

Secom costs \$295.

PC-Cipher 2400 also runs on the IBM PC, PC XT, AT and compatible systems and includes a single-slot board with a Hayes Microcomputer Products, Inc.-compatible modem and a DES 64-bit algorithm encryption. The full-duplex modem offers 300, 600, 1,200 or 2,400 bit/sec. transmission.

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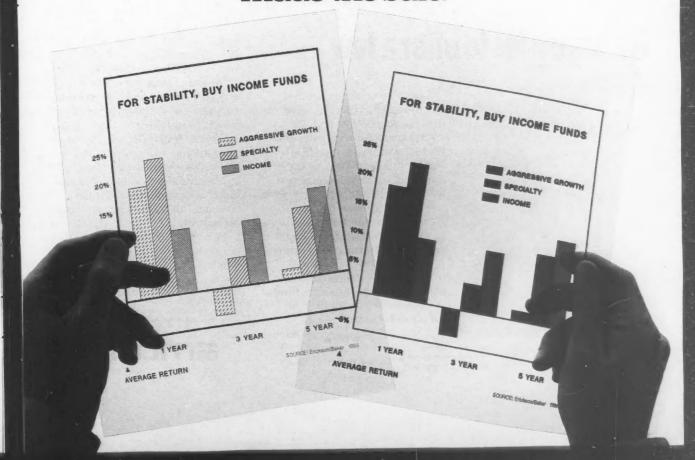
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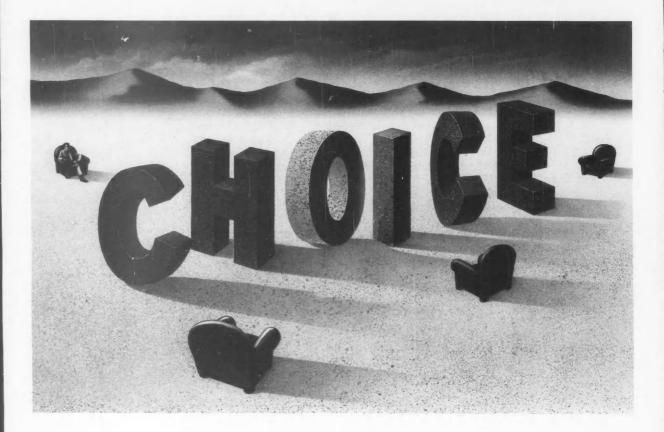
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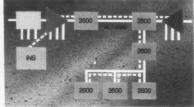
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The Networking Experts

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Organizations are groping for tools and techniques to help them bring local-area networks into the backbone orbit

PULLING LANS NTO THE ACT

BY LEE SUSTAR



fizer, Inc. is about to stage a roundup. After several years of unchecked local-area network development, the New Yorkbased pharmaceuticals company has decided the time has come to impose some accountability on its scattered LAN installations. The way to do this, the company has determined, is to tie the LANs into a larger network configuration — specifically, the corporate Systems Network Architecture (SNA) backbone.

"We don't have one entity that knows where all the LANs are right now," says John Mrsich, manager of technical services. "At this point, we recognize that there plan as relatively autonomous groups of users snapped up PC LANs on an as-needed basis. is a requirement to link our LANs to some kind of

backbone. The effort is still in its earliest stages. According to Vincent Costa, data communications manager, the firm is only now entering a pilot stage to integrate LANs with its backbone wide-area network. Initially, he says, the project will be based in the New York headquarters, which contains one of the 64 data centers that the company maintains throughout the world.

Pfizer's objective in pursuing this integration effort is more than just census taking. It also hopes that physical connection will help raise the standards of information handling at the local level. As Pfizer's MIS staff asserts control over the company's LANs using IBM's Netview network management facility to monitor traffic and the points at which the LANs interface to the backbone, personal computer users will have to adopt a more professional attitude toward their computers, Mrsich says. LANs carry with them the 'implication of a certain informality that begins to go away when you decide to install a gateway" to the corporate backbone network, he says.

Like Pfizer, most U.S. organizations acquired their current LAN populations without design or

In the 1980s, PCs boosted office productivity and became cornerstones for mini information systems outside large companies' MIS departments. By the middle of the decade, emerging work groups had spawned a technically competent cadre outside of MIS. It was these outsiders who pushed LAN development. And as LANs got cheaper and easier to use, they began to surround

mainframe-based wide-area computer networks like vines on an aging building. But vines, while attractive, can also obstruct the view.

Many companies are now reaching the conclusion that these strays must be gathered back into the mainstream of corporate computing, not only for the sake of accountability but also for improved efficiency for locally networked users, some of whom are beginning to suffer from the limitations inherent in their independent status. LANs, these users are discovering, are no help when you need fast access to information residing in a data base on the corporate mainframe.

What companies are coming to realize, says Mark Leary, director of communications market research at International Data Corp., is that some form of LAN-to-wide-area network interaction is critical in order to make effective use of distributed computing power. "I'd say most people are at least thinking about it now," he says. "You can't

Sustar is a New York-based free-lance writer

LAN act

FROM PRECEDING PAGE

really have a well-planned networking strategy unless you

The problem is that unification is not always a straightforward process. Until recently, most corporate LANs were installed with little regard to how they might be interconnected or linked to established data networks. Users who wished to tie PCs to wide-area networks found few vendors available to help them.

Although several vendors offered bridges and gateways between incompatible LANs in the same environment and Banyan Systems, Inc. provided a Unixbased LAN server designed for wide-area communications. Vitalink Communications Corp. in Fremont, Calif., was one of the few companies specializing in building high-speed links between geographically diverse work group LANs and other processors.

The company's 802 WAN was perhaps the industry's first comprehensive effort to solve the problem, and its Translan product, announced in January, strengthened the network management facilities of the Vitalink

product line.

Vitalink is no longer playing alone, however. A number of companies have spotted potential in a market that analyst George Colony calls network "spans" — routers bridges and gateways that span gap between scattered LANs and corporate backbone networks. Colony, president of Forrester Research, Inc. in Cambridge, Mass., predicts that shipments of network spans will rise to \$92 million this year, a \$34 million increase over last year, and will hit \$550 million by 1991. Indeed, there is nowhere to go but up. Colony estimates that no more than 3% of LANs are genuinely integrated with wide-area networks.

Merger mania

Eager to assimilate this technology, computer vendors are snapping up LAN vendors: Tandem Computer, Inc. purchased LAN pioneer Ungermann-Bass, Inc.; 3Com Corp. merged with Bridge Communications, Inc. and allied itself with Microsoft Corp.; Hewlett-Packard Co. launched its own X.25 packet-switching network; T1 vendor Network Equipment Technologies, Inc. (NET) bought Excelan, Inc.; Digital Communications Associates, Inc. acquired Fox Research, Inc.; and Unisys Corp. purchased Timeplex, Inc. Many analysts doubt that any independent LAN vendors will survive this consolidation.

Furthermore, the growing demand for LAN and wide-area network links has attracted several other firms - including San Jose, Calif.-based Halley Systems, Inc., Wellfleet Communisort of gateway into the main host system, along with access to asynchronous communications such as MCI Communications Corp.'s MCI Mail. The third step, he says, is bridging and routing of LANs for the transparent interconnection of

chose to bring wide-area tech-

work groups. Like Vitalink, Halley Systems

> learning bridge. These products were originally developed for university and scientific and technical users of DEC workstations and minicomputers, says Mark Strangio, director of marketing at Wellfleet. But with powerful, graphics-oriented workstations sup-planting PCs on the desktop, Wellfleet identified an opportunity for its high-bandwidth solutions.

Its communications servers

include a concentrator node. which attaches up to 26 LANs di-

rectly to up to 52 wide-area net-

works, including T1 circuits. A

link node performs similar func-

tions for smaller networks. A processor module, known as the

Advanced Communications En-

gine, provides Technical Control

(TCP/IP) and Digital Equipment

Corp. Decnet routers as well as a

Protocol

Protocol/Internet

Gary Krall, director of marketing at Advanced Computer Communications, says his company is targeting a somewhat different market with its ACS 4030 Remote Ethernet Bridge. This protocol-independent device links separate Ethernet LANs through either asynchronous lines or CCITT X.25 public packet-switched networks. But it does not have the routing intelligence of either the Vitalink or

1 IS becoming more cost-effective, and you can put voice over it as well."

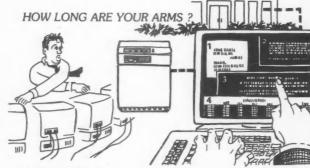
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cations. Inc. in Bedford. Mass.. and Advanced Computer Communications in Santa Barbara. Calif. - to the LAN interconnect market.

Ed Moura, a spokesman for Halley Systems, says most companies go through three phases on the way to linking LANs and wide-area networks. First, he says, users who have experienced a productive work group environment "start building more and more applications and want to expand out of workgroup-centric systems.

When that happens, organizations typically construct some nology to the local environment, Moura says. The company's Connect LAN, announced in March, is built on hybrid bridges and routers, or "brouters, which connect multiple Ethernet LANs. It also features modems for asynchronous and synchronous transmissions up to 64K bit/sec. over T1 and satellite links. These brouters are managed by Connect LAN/View, a network management product.

Wellfleet Communications, which bills itself as a specialist in networking networks, features a product line similar to Halley Systems' and Vitalink's.



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Halley Systems products.

"We think the direction things are taking is to dedicated servers," Krall says. "They will provide the LAN-to-wide-area network interconnectivity. The bridge market will remain protocol independent, sending and receiving packets or using X.25 to provide connectivity."

The emergence of companies specializing in LAN-to-wide-area network integration will also force today's LAN vendors to rethink their businesses, says William Carrico, president of 3Com. Carrico, who ran Bridge Communications prior to its pur-

VEN IF the products for LAN-to-wide-area network integration are out there, the expertise required to install them is in short supply.

chase by 3Com, says the merged company is pushing beyond the purchasers of work group LANs in an effort to get the attention of executives who design and purchase telecommunications equipment — those whose budgets for communications equipment run into the millions of dollars, he says.

Carrico is among those who expect T1 circuits to play an increasingly important role in internetworking LANs. "It's becoming more cost-effective, and you can put voice over it as well," he says. T3 technology and Integrated Services Digital Network (ISDN) will also be in demand in the future, because high-end users "can never get enough bandwidth," he says.

Test of skills

Even if the products for LAN-to-wide-area network integration are out there, the expertise required to install them is in short supply. David McMaster, president and chief executive officer of Gateway Communications, Inc., warns that since no single vendor will be able to provide comprehensive network management, users will have to become more skillful at systems integration than they are today. "Most networks today are poorly managed," he says.

The necessity of developing complex hybrid networks of public and private facilities, along with uncertainty about future deregulation, has made it difficult for large corporations to map out a long-term strategy for wide-area networks, let alone develop the seamless integration of PC LANs.

Whereas companies could once turn to the Bell system to solve the bulk of their needs, firms must now piece together

services from each of the regional Bell holding companies, as well as from AT&T and other common carriers. For example, many of the regional holding companies offer leased lines and packet networks as well as the so-called central office LANs, which provide Centrex-type ser-

vices to PC users. Within a few

years, ISDN will pipe 56K and

64K bit/sec. circuits over ordi-

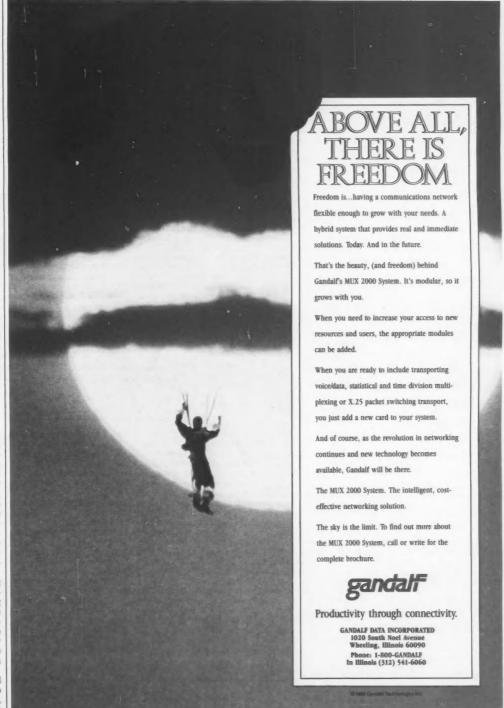
nary telephone wire.

Furthermore, IBM has exploited the fears of MIS and telecommunications managers by touting its mainframe-based Netview products as the only de facto standard means of extending centralized network management to dispersed PC LANs.

In fact, other companies, particularly T1 equipment vendors, have their own network management systems that accommodate other vendors as well. These vendors, as well as those of other telecommunications products, have pledged to support the Netview/PC interface that provides diagnostic information to IBM hosts.

Furthermore, IBM understands that despite its market share, its own computer network design will have to be overhauled to accommodate the dispersion of processing power. In recent years, the company has made its mainframe-centered SNA more amenable to peer-oriented transaction processing through LU6.2 protocols.

In addition, IBM has redesigned its Rolm Corp. subsidiary's Computerized Branch Exchange switch. Last year, IBM announced an agreement with



T1 vendor NET to make NET's communications processors more accessible to high-speed links.

Fading distinctions
Bruce Smith, president of NET, says the era of one-stop shopping for telecommunications is over. But, he says, providers of communications equipment and services will increasingly be called on to support and manage a variety of data networks - so much so that the distinction between wide-area networks and LANs will disappear.

"My view of this is that a few years from now, we will not hear about local- and wide-area networks as separate things, Smith says. That was the reason, he says, that NET decided to purchase Excelan, a leader in TCP/IP LANs.

Although Smith says he expects Netview to play an important role, he thinks the highly competitive workstation industry will prevent IBM from pushing SNA down to the desktop.

"There are a lot of manufacturers making excellent work-stations, and the applications that drive them will come from a variety of different sources," he says. As a result, "there is a real need for a systems-type approach from a noncomputer company," Smith adds.

Such an effort will require the

orientation to serve their customers. But he says he believes the acquisition of a LAN vendor would impede such efforts.

Because most LANs are purchased on an ad-hoc basis for specific work group applications, Botwinick contends that rather than sell customers a competitive product, systems integrators must be prepared to handle the incompatible LANs already implemented on customer prem-

A big game
Tom Nolle, president of CIMI Corp., a Haddonfield, N.J., consultancy, says there is no question that a new type of systemsoriented data communications vendor will play a crucial role in filling the gaps between LANs and wide-area networks - such as the limitations inherent in SNA access and in LAN-type servers' ability to access highspeed data links - and grappling with network management.

'People are realizing now that data communications is too complicated to be put together from Lego sets," Nolle says. 'Vendors have to encompass a broad range of needs. You can look around and see that there aren't many old-line datacom companies left."

Nolle identifies two main tiers of data network users today: those with high connectivity and technologies, the advance guard in LAN-to-wide-area network integration is the U.S. government.

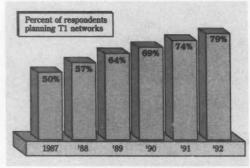
Paul Ticknor, long-haul communications manager for the Numerical Aerodynamics Simulation (NAS) project at the National Aeronautics and Space "It also prevents them from passing through the network to access a computer at another

Cashing in

In the private sector, most of the innovators in connecting LANs and wide-area networks are

T1 gains ground

Use of T1 networks expected to surge almost 30% by 1992, based on information from 1,750 U.S. organizations



from Lego sets."

INFORMATION PROVIDED BY VERTICAL SYSTEMS GROUP FROM ITS "T1 MULTIPLEXER INDUSTRY ANALYSIS: 1988"

Administration's Ames, Calif., facility, says that within the last two years, 22 government and industrial sites were linked to two Cray Research, Inc. Cray II supercomputers through a combination of leased 56K bit/sec. lines linked through Vitalink's bridging devices. This was done in an effort to give the outside sites access to the power of a su-

percomputer. When aerospace companies across the country upload work to the Cray computers, they gain access to all workstations and other unrestricted resources on the TCP/IP Ethernet LAN at Ames, Tick-

nor says.

Workstation users at other NASA sites gain access to the LAN via a T1 link, he says. Each of the 22 users at the outside sites has anywhere from one to 30 workstations capable of accessing the Cray computers.

"Typically, they will ship large files over to the NAS project, load it onto the supercomputers and have all the heavy number crunching done here. Industrial sites ship an average of 100M bytes of data per month," he says.

Having access to the Cray machines benefits both NASA and the outside companies, since the latter can run their government-commissioned jobs on the supercomputer faster than on their own computers.

NASA selected Vitalink to bridge the LANs because of its security features, Ticknor says. "Their equipment allows access only to those workstations designated NAS-accessible," he says.

found in the financial industry, where fast-changing data such as prices, interest rates and currency exchanges — have driven MIS departments to push as much data onto the desktop as quickly as possible.

data communications at Sovran Bank NA in Norfolk, Va., says he does not care which LAN the

Anthony Flora, manager of

EOPLE are realizing now that

complicated to be put together

TOM NOLLE

CIMI CORP.

data communications is too

necessary adjustments. Furthermore, Flora says he looks forward to the day when IBM's Advanced Peer-to-Peer Networking, a dynamic routing facility for IBM's System/36, is generalized throughout SNA.

Flora notes that LU6.2, the

peer-oriented SNA protocol po-

sitions the company to make the

This would ease communications, via T1 lines, among Sovran's six data centers as well as enable PCs on multiple LANs to communicate at megabit speeds without the intervention of an IBM host.

Until such technology is available, Flora says he sees no need to link Sovran's LANs independently of the SNA backbone. "Ninety-six hundred bits per second isn't good enough for file transfers between LANs," he

Wait and see

Right now, many organizations are proceeding slowly - doing only what they need to do and waiting to see what comes of all the promises they hear and the new affiliations they see developing.

Pfizer's Costa, for example, is stepping slowly along the integration route, waiting until he can find out whether IBM's OS/2 Extended Edition will simplify the job.

"A lot of issues we are up against will supposedly be resolved in that," he says.

At Gifford Hill & Co., a Dallas-based building materials sup-

plier, Frank Garber, manager of data communications, is confident that when the company reaches a stage at which fuller integration is necessary, the

means will be there. Right now, Gifford Hill has three

LANs, with about seven PCs on each, running Novell, Inc.'s Netware software. Two of the LANs are being used to dispatch trucks to and from the company's two plants; a third is used in the insurance department at the corporation's headquarters.

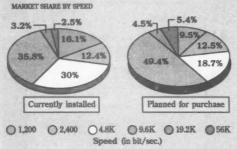
The dispatching networks are tied to the company's Unisys mainframe, while the third is geared to departmental use.

Garber says the company has no immediate plans to tie the LANs together, although he is confident that it would be reasonably easy to do so, using features included in Novell's System Fault Tolerant (SFT) 2.1

"The LAN market has been around long enough that there really aren't that many pitfalls any more," he says. "There are people who know what they are doing. But when we got involved a few years ago, we didn't know what we were doing, and a lot of vendors didn't either." .

Speed counts

Most modems currently installed at mainframe sites offer transmission rates of 4.8K bit/sec. or higher, but 60% of sites planning purchases will buy modems offering at least 9.6K bit/sec.



INFORMATION PROVIDED BY FOCUS RESEARCH SYSTEMS, INC.

blend of expertise typically found in three types of firms - LAN companies, T1 companies and the bridge and gateway providers. "You need all three of those to play," Smith says.

It is also Smith's contention that the advent of IBM and Microsoft's OS/2 and other multitasking LAN and desktop environments will swamp, with an overload of technology, what he considers to be a relatively simple matter of LAN-to-wide-areanetwork connectivity.

Ed Botwinick, president of Unisys Networks, of which NET's archrival Timeplex is now a part, agrees with Smith's view that data communications vendors must adopt a systems low performance needs, such as corporatewide electronic mail; and leading-edge firms whose move toward distributed processing mandates "naked, highperformance connections. which focus on bandwidth and speed rather than the seamless integration of LANs and widearea networks.

In between are the majority of users who need dependable, regular host access but have no special requirements. For these middle-level users, "anybody's Netbios is as good as anybody else's," Nolle says. Typically, these users can employ a LANto-SNA gateway available from virtually any LAN vendor.

As with many other leading

bank's departments use, as long as it has the necessary interfaces to the bank's SNA backbone data

In most cases, Flora says, the choice of LAN vendors depends on the type of file transfer mechanism available with the product. Nevertheless, Flora is concerned that in the long term, the proliferation of LANs will frustrate his efforts to build a comprehensive network management scheme. Although Sovran uses Netview, Flora does not believe it will be able to "see all, know all.

"Maybe you will have a thirdparty X.25 packet-switched network with a translation in the [IBM] front-end processor," he says. "I don't think any good vendor has a handle on network management for PCs on any large-scale basis. I think there will have to be some fundamental changes in connecting not only to the mainframe but to other PCs and third-party networks."

PBXs come back down to earth

BY MICHAEL FINNERAN

One of the early contenders professing to bridge the gap between local- and wide-area networks was the voice/data private branch exchange (PBX). Not only would this marvelous machine connect local users to longhaul facilities, proponents claimed, but it would also merge

voice, data and possibly other communications services into one integrated system.

These promises were too

good to be true. What users were presented with **UILDING** overan priced solution to a reasonproblem that able case had already been to justify the cost solved. The best of using a voice/ data PBX for data news forthcoming from the PBX front is that realiswitching is exty has set in and tremely difficult. users are in for a duller but clearly far more productive - phase

The voice/data PBX idea first surfaced in the mid-1970s with the introduction of the first PBX systems to use a digital switching network. PBX vendors - a well-intentioned group of engi-neers — figured users should switch data as well as voice in the PBX.

The idea was that one system should be less expensive than two. Voice/data switching did not really matter too much back

Finneran is president of dBrn Associates, Inc. in Woodmere, N.Y.

in the late '70s, because while the PBX vendors were gearing up the public-relations machinery, most of the systems did not have the capability to support data terminals at all.

By the early 1980s, data switching capabilities were being built into voice PBXs. But once it became clear that voice/ data PBXs could not be sold on the basis of cost savings, determined PBX vendors set out to

construct new purchase incentives. From this source sprang the idea of four distinct generations of PBX systems.

While the trade press grabbed hold of this fourth-generation PBX idea, most of the industry was having trouble coming

up with a definition of what it meant to be a fourth-generation PBX. Truth be told, the only really workable definition of a fourth-generation PBX was offered by consultant Dick Keuhn, who identified the essential characteristic of this generation as 'undeliverability.

Unfortunately, PBX vendors proceeded to send out voice professionals to sell these ill-defined capabilities. The ugly truth was that building a reasonable case to justify the cost of using a voice/ data PBX for data switching is extremely difficult.

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bankrupt, and CXC is currently pushing its Automatic Call Distribution capability because the company could not compete in the PBX market.

Back to basics

Now, after a few years of losses following divestiture, PBX vendors are finally starting to talk about such mundane issues as service, upgradability and support in providing basic voice services. Data switching is still part of the package, but nobody talks too much about it.

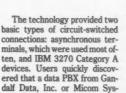
Playing their strong suit, PBX vendors have introduced some interesting capabilities in voice. Digital trunk interfaces are available for terminating T1 facilities. Software packages can operate large-scale private voice networks, integrated directory systems and user station equipment. An exciting capability is integrated voice mail systems.

The PBX business seems to be breathing a sigh of relief now that it is out of the high-tech spotlight. We don't hear anything about generations, and the three major suppliers - AT&T, Northern Telecom, Inc. and IBM/Rolm Corp. - are in the same positions they were before all of this got started.

But the PBX guys have caught sight of something that bears all the markings of confusion: Integrated Services Digital Network, or ISDN. They're probably figuring, "If we keep using this ISDN term to mean different things at different phases of the moon, then we can get them going on a fifth-generation PBX.

We'll cross that bridge when we come to it. •

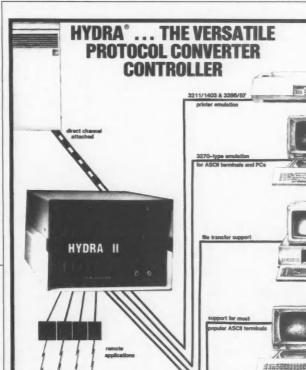
TELEFIER SEE



tems, Inc. could do virtually the same thing for about one-fifth the cost. The only fourth-generation PBX products that ever seemed to fit in that category were Ztel, Inc.'s PNX and CXC Corp.'s The Rose. Ztel, however, invested its

research and development bud-

get in public relations and went



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OTLIGHT

Packet switching here to stay

BY ROY ROSNER



peting the embryonic technology as the sendseverything communications pipeline of the future.

If the promises of these visionaries come true, telephone customers of the 1990s will be treated to a candy store of services delivered on an all-fiber, all-digital worldwide telephone network. Flowing through this network will be data, voice and electronic mail, videotex, alarm services, desktop teleconferencing, call previewing, facsimile, radio paging and others.

According to ISDN technologists, both packet switching and copper twisted-pair wiring will become anachronisms as fiberoptic networks spread. Busi-

Rosner is vice-president and general manager of network products at Telema tics International, Inc. in Fort Lauderdale, Fla. nesses will scrap plans for private packet networks, they say, as rates for circuit-switching transmission undercut packet-switching tariffs.

Fortunately for the packet industry, this theory has some large holes. Chief among the gaps is the assumption that lower cost is the primary attraction of packet switching.

In fact, one of the most important advantages of packet switching is its translation capability. Packet networks allow different vendors' computers to communicate with each other in their own languages, with the network serving as an interpreter. As a result, data can be exchanged among many types of computers, regardless of their internal architectures.

The packet-switching industry is rooted in the widely accepted CCITT X.25 interface standard, which defines the user-to-packet-network interface. At least 100 countries now offer packet-network services.

Packet networks shoulder the communications processing tasks that would otherwise tie up expensive mainframes. They perform code and speed conversion between dissimilar comput-

ANY businesses would continue to use private or public packet networks even if long-distance transmissions were free.

ers, reduce the number of physical ports and lines and add levels of security within the network.

Packets travel from switch to switch, with each switch retaining a copy, until the next switch or the final destination signals that its twin has arrived. If the transmission is interrupted, the twin is released.

Using this hold-and-forward

pattern, switches can respond instantly to traffic tie-ups or outages by rerouting packets along alternate paths. This fail-safe mechanism is not found in voice-tailored circuit-switched networks, which require long setup times to establish a dedicated path for data transfer.

For all of these reasons, many businesses would continue to use private or public packet networks even if long-distance transmissions were free. In all likelihood, they will be anything but that on an all-fiber network. Stringing fiber to every household and business in the U.S. could cost billions of dollars.

The technologists' preoccupation with building ever wider data highways to carry bandwidth-devouring services, such as on-demand video and large-scale data transfers, may not be endorsed by user companies that would have to pay for all that horsepower.

Many users will be content with a packet-switching network that provides kilobit- or megabit-per-second speeds over copper wire. In fact, it is conceivable that future jumps to gigabit-per-second or even terabit-per-second speeds might actually impede communications by tying up on-premises equipment with unwieldy bulk data transfers.

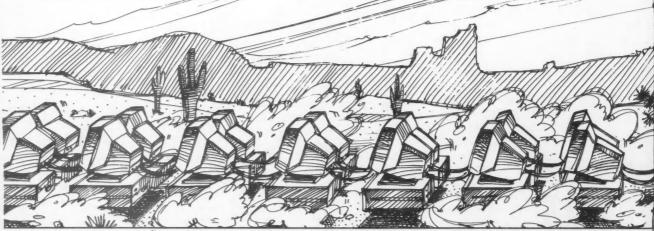
Furthermore, those who insist on writing a premature epitaph for the packet-switching industry overlook the vital role packet switching will play in the D channel of ISDN.

When ISDN or a variant of it emerges, an enormous market will open up for ISDN-compatible packet-switching equipment, including high-speed, programmable packet switches and network-access computers. This will happen regardless of whether the transmission is through fiber or copper wire.

It will be up to today's packetswitching suppliers to develop new equipment interfaces compatible with the ISDN recommendations currently under review by international standards bodies.

With an undertaking as vast as ISDN, the process of standardization and industry acceptance could easily last until the next century. During this period, businesses will be forced to rely on private or public data communications networks or on some form of pre-ISDN Centrex services.

And when ISDN finally arrives, the technically astute will be there to supply a new family of compatible, high-performance, programmable packetswitching products.



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Arbiter supports transparent data access and file transfer between the PC and host, either through virtual disks or directly with host files.

ISDN shows promise as a LAN booster

BY MARTIN SINNOTT



Integrated Services Digital Network (ISDN) technology —

which will gradually become available this year and into the 1990s — promises to provide companies with one of the least expensive ways of setting up local-area networks. Instead of the dedicated wiring required by other LAN schemes, ISDN will allow companies to piggyback their networks onto their telephone systems.

ISDN is the term for all-digital communications as specified by emerging standards of the Consultative Committee on International Telephone and Telegraph (CCITT). It allows end users to simultaneously transmit

Sinnott is director of the Dayton Development Center at NCR Corp.'s Personal Computer Division in Dayton, Ohio.

voice, data, video and facsimile over a single communications line. Because a LAN based on ISDN technology can handle both voice and data simultaneously, two network users can, for example, talk on the telephone, review the same article on their respective personal computers and make corrections, all at the same time.

ISDN technology may also make PC networks more common, because it will make it relatively easy to connect PCs both locally and in wide-area networks. Although the communications software used to operate LANs and wide-area networks is different, there would be only one set of hardware and one wiring scheme under ISDN.

Despite the apparent benefits of ISDN-based LANs, the technology does present limitations. Most significant is that transmission speeds are limited to only 64K bit/sec. Since most LANs transmit in megabits per second, an ISDN-based LAN will seem very slow if large data transfers are required. However, higher speed ISDN transmissions may someday become possible. One technique, now in the experimental stage, groups multiple 64K bit/sec. channels to create higher speeds.

Another technique, the socalled broadband ISDN, creates transmissions of about 1.4M

bit/sec., which is equivalent to the transmission rate of low-speed LANs, such as AT&T's Starlan. However, the broadband definition of ISDN cannot become standard for at least four years because of the CCITT time cycle.

Even with the current speed limit, ISDN-based LANs could gain a foothold in situations where the network will not be used for large data file transfers or require fast transmission speeds. For example, an ISDN-based LAN will likely be used for electronic mail, which, when utilized with users at several locations, can also take advantage of ISDN's ability to use a wide-area

network while still working through a single interface.

The ability to work through a single interface means that ISDN-based systems can use one board to service the LAN, wide-area network and telephone system. In contrast, most networks require two — an adapter board for the LAN and another board to connect the LAN to the wide-area network.

Large corporations and state governments will be the first to take advantage of ISDN-based

SDN-BASED LANs could gain a

foothold in situations where the

data file transfers or require fast

transmission speeds.

network will not be used for large

Bell operating companies' Centrex switches when these switches gain ISDN functionality. Centrex switches with ISDN functionality are expected to be brought on-line gradually in the coming years by the local Bell operating companies. The first one was installed by Illinois Bell to service McDonald's Corp. in December 1986.

For all companies, the use of ISDN-based LANs may create a conflict within traditional organizational structures. Typically,

telephone network and MIS functions are managed by different groups. By merging the two, ISDN necessitates a restructuring of traditional responsibilities. The ISDN network may be managed by one of

the two groups, or both may re-

Ultimately, ISDN will present many corporations with the opportunity to create LANs without having to implement separate wiring schemes. It will increase LANs' capability by adding the capacity for simultaneous voice and data communications and will enhance the availability of companywide communications systems.

LANs, since private branch exchanges (PBX) are now being installed with ISDN functionality to control telephone and data services. The first one in the U.S. was installed by Northern Telecom, Inc. at the Arizona Department of Transportation in November 1986.

Companies that do not have their own in-house PBXs will also be able to employ ISDNbased LANs by using their local



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Catch-22 in the X.400 market

BY MICHAEL HURWICZ

IBM does not offer software compatible with X.400, the international standard for electronic messaging, in the U.S. The reason it gives is weak demand. An informal sampling of users, however, suggests that IBM's analysis may be a self-fulfilling prophecy; in other words, demand is weak here because IBM doesn't provide products, and IBM doesn't provide products here because demand is weak.

As one might expect, corporations voice a range of opinions about X.400. Some do not currently use electronic mail and find consideration of X.400 premature. Some are straining at the bit, waiting for the day when IBM will offer it. Many see X.400 as a long-term direction but feel that without mature products, the standard will not play a major role in their messaging systems for several years.

Ron Skelton, director of cor-

Hurwicz is president of The MTI Group, a data communications consulting firm in Nashville. porate technology planning at Aetna Life and Casualty Co. in Hartford, Conn., says IBM's current position on X.400 can impede but not stop the market-place from moving away from proprietary systems.

"There's no debate about that," he says. "The only debate is how fast. To some extent, IBM controls the rate because of its dominant position."

In search of standards

3M Corp. in St. Paul, Minn., is a heavy E-mail user and very concerned with the issue of standards. Phil Hayes, 3M's director of information systems, data processing and telecommunications, estimates that the company has 10,000 to 12,000 potential E-mail users in the U.S. and close to 20,000 worldwide.

3M uses IBM's Professional Office System (Profs), Hewlett-Packard Co.'s HP Desk, Digital Equipment Corp.'s All-In-1 and General Electric Co.'s Quik-Comm. To connect these systems, 3M currently uses an Email gateway from Soft-Switch,

Inc. in Wayne, Pa.

"We need an international messaging standard that's implemented in the same way by all vendors," Hayes says. "I see that as being a practical reality in the 1990s. Meanwhile, we're getting temporary relief from

products such as Soft-Switch in order to have messaging compatibility across a multivendor environment."

Bill Lawrence, a network engineer at the San Onofre Nuclear Generating Station in San Clemente, Calif., is in a similar position, although on a

similar position, smaller scale.

"We've thought about X.400 as a means of connecting our Profs system and the CC:Mail application on our Netware local-area networks," Lawrence says. "PCC/Systems is telling us they will support X.400. We're looking for a standard solution that would work in the whole SNADS environment." he adds,

referring to IBM's Systems Network Architecture Distributing Services.

However, with IBM not yet supporting X.400 in the U.S., Lawrence says, "it looks like we're on our own, as usual."

Since it is the lack of mature products — and IBM products in particular — that keeps 3M and Southern California Edison Co., the operator of the San Onofre plant, from jumping into X.400, it could be argued that by refusing to offer products in this coun-

HE FLY in the ointment is IBM's insistence that there is no market for X.400 in the U.S. From our perspective, there is a demand."

RON SKELTON AETNA LIFE AND CASUALTY CO.

try, IBM is depressing demand.

Actna's Skelton is certainly willing to make that argument. "The fly in the ointment is IBM's insistence that there is no market for X.400 in the U.S. From our perspective, there is a demand. We've planned our migration strategy around X.400. We want to make it easy to do business with Aetna. We can't have any control over what E-mail

systems others use, so we have to admit a multivendor environment."

For Aetna, the net result of IBM's nonsupport for X.400 is a holding pattern. "If IBM announces an X.400 Profs interface this year, there is more than a good chance that we would be using it a year from that point," Skelton says.

Taking their own steps

Some users are going ahead without IBM. For instance, the

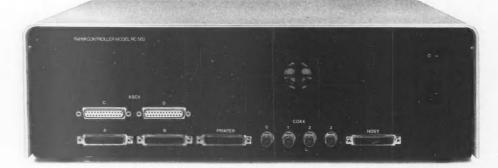
U.S. Forest Service has been planning an X.400 system for years, is already doing limited testing and plans to procure X.400 software from Data General Corp. within months.

Government

agencies can be expected to turn increasingly to Open Systems Interconnect (OSI) software, including X.400, because of the Government Open Systems Interconnect Profile (GOSIP) procurement requirement. This profile, drafted in September 1986 by the National Bureau of Standards, outlines functional specifications for communications systems based

Continued on page S12

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Modem makers flee commodity market

BY RICK VILLARS

The emphasis in modem advertising these days is on differentiation. Ad copy stresses special capabilities such as data compression, data encryption, high-speed transmission, micro-tomainframe interfaces, network management, synchronous dial sets and CCITT X.25 conversion.

There is a good reason for this shift in emphasis. Unadorned, modems are now commodity products. The chip sets are identical, and the prices hardly vary.

In an effort to distance themselves from the commodity label and price tag, modem vendors are currently pursuing one of two strategies — either using new technologies to build a better modem or leaving the basic technology untouched and devel-

Villars is senior marketing analyst of data communications at International Data Corp. in Framingham, Mass. oping add-on features that address special needs.

The best example of the first approach is the recent introduction of very high-speed (9.6K to 19.2K bit/sec.) dial-up modems.

The first high-speed solution to emerge was the asymmetrical modem, which simulates full-duplex communications at high speeds either through a method of rapid direction shifting called ping-pong or by combining high-speed transmission in one direction with very low-speed transmission — 300 bit/sec. — in the opposite direction.

The use of simulated full-duplex technology requires minimal alterations, and developers are able to offer these highspeed solutions at relatively low prices. However, the effectiveness of these devices is limited to applications such as large, oneway file transfers and facsimiletype services.

A second high-speed solution

introduced more recently requires the entire modem to be significantly redesigned. An advanced echo-cancellation feature and a forward error-correction technique called Trellis had to be developed to ensure full-speed communications in both directions simultaneously. The result of these developments was the CCITT V.32 modem standard.

Development of V.32 modems represents a good short-

ENDORS ARE directing more and more attention to . . . adding value without altering basic technology.

term strategy for vendors, but in the longer term, these providers are going to face a conflict with their goal of differentiation. While use of a standardized high-speed modulation technique should guarantee that modems developed by different vendors can communicate at full capacity, only development of a standard implementation can really guarantee compatibility.

Not surprisingly, vendors are directing more and more atten-

tion to the second strategy for avoiding the commodity market — adding value without altering basic technology.

One popular value-added feature is data compression. Target users for data compression devices include those who require greater throughput than 2,400 bit/sec. for certain applications but do not want to replace their installed network.

Currently, vendors can choose one of three data compression methods, each of which involves tying software and/or adjunct hardware into the modem package. The first data compression method is the use of Level V of the Microcom Networking Protocol (MNP), which offers compression rates of more than 2-to-1 for 2,400 and 9.6K bit/sec. modems.

The second method is an alternative data compression technology, Commpressor, developed by Adaptive Computer Technologies. Commpressor offers higher levels of data compression in certain environments but does not have the wide-scale acceptance enjoyed by MNP.

A final data compression option is to develop a proprietary compression scheme. The most recent examples of this approach, which enables a vendor to lock in network users with

compression requirements, are products from Hayes Microcomputer Products, Inc. and Telcor Systems Corp.

A second value-added feature that vendors are flirting with is security, which includes encryption, automatic callback and controlled access. Security features on modems are not new, but until recently only users with national security-oriented networks required them. The increasing use of dial-up communications in the financial market has altered this, however, and modem vendors are rushing to supply this vertical market.

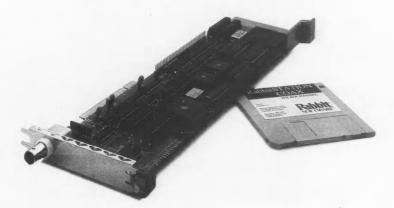
Built-in protocol processing is the most widely anticipated value-added feature. Vendors plan to use the processing capabilties built into basic modem chips to provide specific protocol conversion features.

version features. Currently, the most common-

ly available protocol conversion feature is built-in X.25 packet assembler/disassembler.

What is the importance of the value-added strategy to users? The development of application-specific features that can be installed on basic modem sets will provide users with increasingly focused products — in some cases even custom ones — while calling for minimal sacrifices in overall connectivity.

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Continued on page S16

Catch-22

on OSI standards

Because of GOSIP, it is a virtual certainty that most government agencies will eventually follow the lead of the Forest Service and adopt X.400.

According to Steve Werner, the service's branch chief for telecommunications, the Forest Service has a private mail network implemented on 850 DG MV superminis. The agency uses two products, both of which support X.400, to handle its E-mail traffic.

DG's Comprehensive Electronic Office handles intraservice E-mail, while Telemail, from Reston, Va.-based Telenet Communications Corp., is used for communications with other U.S. Department of Agriculture agencies, other federal departments, state forestry departments and the International Forestry division of the Forest Service.

Because both systems conform to X.400, Forest Service users can send messages within the Forest Service network and Telemail using Comprehensive Electronic Office. X.400 will also be used for the Incident Command System, a multiagency management system for responding to natural disasters such as fires, earthquakes and volcanic eruptions.

"Other government agencies are interested and are starting to test X.400 software," Werner says. "In the private sector, there may be more of a wait-andsee attitude. Sometimes, the federal government has to take the lead." .

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OTLIGHT

ASK THE VENDOR

The following questions were solicited from users and conveyed to the vendors for responses.

EICON TECHNOLOGY CORP.: We

currently support graphics only

for IBM 3270 emulation. How-

ever, with Access/X.25, it is pos-

sible to do color graphics with



What is the status of Infinet's plans to link with IBM's Netview

Netview/PC?

David Herndon Vice-president. communications Southern National Bank Charlotte, N.C. INFINET, INC.: This year, we will offer an interface to IBM's Net-

view and Netview/PC that will use the capabilities of our NIS Series 90 network management systems. The interface will use a single Netview/PC interconnection between the host and the NIS Series 90, regardless of how many domains are connected.

What network manage-ment tools will Tellabs be making available to manage its Crossnet product?

Thomas Ho

Executive director Intelenet Commission Indianapolis TELLABS, INC.: We recently intro-

duced Telemark, a comprehensive network management and control system for Digital Equipment Corp. VAX minicomputers designed to provide single-point control and maintenance of hybrid voice/data networks. Specific functions include customercontrolled reconfiguration, circuit provisioning and alarmmessage processing.

Cermetek has introduced a 9600E with an upgrade. What will the upgrade accomplish? Are you coming out with a higher speed modem?

Woody Shafer DP manager Dana Corp., Spicem Transmission Division Knoxville, Tenn.

CERMETEK MICROELECTRONICS, INC.: We introduced a data compression upgrade for our V.32 modem product line, including the 9600E. The upgrade is spe cifically designed for high-speed, full-duplex communications. The effective throughput is 19.2K bit/sec., twice that of a V.32.

We do not currently plan to come out with a higher speed

We have a 50-station Novell network with three file servers connected via Eicon Access/X.25 gateway to a Sequent minicomputer running Unix. How would we do color graphics and can Access support this?

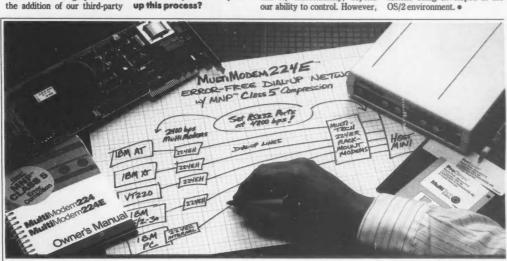
Jerry McLaughlin MIS director Clark Bartis, Inc. Dallas

support option and a terminal emulation package from another vendor.

When using Virtual Microsystems' Network Coprocessor, we have noticed an unusual delay in the initial logon procedure for DEC VAX emulation. Are there plans to speed up this process?

Lance McCutchen Information systems programmer Texaco Denver

VIRTUAL MICROSYSTEMS, INC.: The delay in the initial logon procedure is because of the Netbios Name Server. The delay is inherent in the way Netbios works and is, unfortunately, beyond our ability to control. However, we do expect the situation to improve. Netbios was originally written to serve the limited needs of IBM's original PC Network. Since Netbios now become the standard network interface for LAN applications, there is reason to believe that this standard will be enhanced to support the sophisticated applications being developed in the OS/2 environment. •



MNP®Class 5 Data Compression Modems from Multi-Tech Systems:

When it has to be as fast as it is good

- In the dial-up modem world, Class 3 MNP is the hands-down choice for hardware-based error correction. With its 100% error-free transmission, the MNP protocol is used in dozens of manufacturers 1200 & 2400 bps modems, and our MultiModem224E modems have been recognized as the best of their kind (see box)
- Well, the best just got better. Multi-Tech modems now offer MNP Class 5 data compression along with error-correction. Class 5's 2-to-1 compression and serial port speed conversion means that you can buy a 2400 bps modern from Multi-Tech and run it at speeds of up to 4800 bps*. Error free!
- Multi-Tech Class 5 modems will communicate automatically with MNP Class 4 and Class 3

modems, as well as non-MNP modems. And if you wish, you can even upgrade your present Multi-Tech Class 3 & 4 moderns to Class 5 (call us for details).



In the May 12, 1987 edition of PC Magazine where 87 modems were reviewed, only three were awarded *Editors Choice*: "For a high-performing 2,400-bps modem with a slew of extras, check out Multi-Tech Systems' MultiModern224E...with [its] high immunity to line noise and the extra advantage of MNP error correction, [this modem] should do a fine job of managing fast, error-free CHOICE data communications."

- Our Class 5 modems incorporate all of the features of our Class 3 versions. Features like phone number & configuration memory, auto-repeat dial and "AT" command compatibility. And Multi-Tech's seventeen years of modern manufacturing experience.
- Please call us toll-free at 1-800-328-9717, for additional information...get a modern that's as fast as it is good!
- * The compression throughput of MWIP Class 5 is, like all compression schemes, dependent on the type of data being sent. The more 'compressible' the data, the greater the Throughput. For example, a typical test file transfer is 2400 bps should yield at throughput of between 4400 and 4900 bps. And the MultiModem24E's speed conversion and flow outriful features let you set your modem's R523Cc port at 4800 or even 9600 bps, to take full advantage of the Class 5 compression. Trademarks: MultiTach, MultiModem—Multi Each Systems, fic. 'PC Magazine—Ziff Davis Publishing, MNIP—Microcom Network Protocol licensed from Microcom.



The right answer every time.

Multi-Tech Systems, Inc. • 82 Second Avenue S.E. • New Brighton, Minnesota 55112 U.S.A. 1-800-328-9717 • 1-612-631-3550 • FAX 612-631-3575 • TWX 910-563-3610 (U.S.A.) • Telex 4998372 MLTTC (Inf



Modems: 9.6K bit/sec.

COMPANY	PRODUCT	MODEM STANDARD	SYNCHRONOUS/ ASYNCHRONOUS	HALF/DUPLEX	DIAL BACKUP	SYNCHRONOUS DIAL COMMAND	PALLBACK SPEEDS (BIT/SEC.)	ERROR CORRECTION	LINE-QUALITY ADJUSTMENTS	BUILT-IN MULTIPLEXER	SECURITY PEATURES	NETWORK MANAGEMENT FEATURES	PRICE
Anderson Jacobson, Inc.	AJ 9631-SA	V.33	Both	Pull	Yes	Yes	4.8K	Trellis	NP	Yes	Prost-panel	V.54 loopback	\$2,995
(406) 435-8520	AJ 9601-M/MD, AJ	V.29	Synch	Both	Yes	No	7.2K, 4.8K	None	Yes	No	None	V.54 loopback	\$1,895
	9601-F/FD AI 9601-ST/STF		100							200	TEN STATE OF STREET		\$1,295
	AJ 9641-1/10, AJ 9641-	V.29 V.29	Synch	Both	No Yes	No	7.2K, 4.8K 7.2K, 4.8K	None None	Yes	No			\$1,645
12 - 31 - 131	F/IFD			100			100						
Ark Electronic Products, Inc. (800) 228-0914 (407) 724-5260 (Fla.)	Ark 9.6K A/B Modern	V.29	Synch	Both	NP	Yes	7.2K, 4.8K	None	No	No			\$1,595
ATAIT (800) 2HT-1212	Dataphone II 2276A	V.32, Hayes	Both	Both	Yes	No	4.8K	MNP ¹ , Trellio	Yes	No	None	Self-test, diagnostics, user-	\$1,995-\$2,295
	Dataphone II 2096	Proprietary, Hayes	Synch	Full	No	No	None	None	Yes	Yes	None	Dataphone II Levels 1 - 4	\$2,300-\$4,080
BCH Equipment Corp. (813) 541-6404	Model 9600/29	V.29	Synch	Either	No	No	7.2K, 4.8K	None	Yes	No		Line-quality display	\$1,295
/	Modem 9600 Fast Poll	NA (Fast Poll)	Synch	Either	No	No	7.2K, 4.8K	None	Yes	No	None	Line-quality display	\$1,495-\$1,995
Black Box Corp.	Fully Featured Modem 9600 Asynch	V.29	Asynch	Full	No	No	7.2K, 4.8K, 2.4K,	ED#s	No	No	None	None	\$999
(412) 746-5500	Plus	-	1			1	1.2K, 300			-		Mr. Carles and Co.	
	Modem 9600 Asynch Turbo	V.29	Asynch	Full	No	No	7.2K, 4.8K, 2.4K, 1.2K, 300	EDI	No	No	None	None	\$1,099
	Modem 9600 Synch	V.29	Synch	Both	No	No	7.2K, 4.8K	None	Yes	No		None	\$1,695
	Modern 9600 A/B Modern 9600IP	V.29	Synch	Both	No	No	7.2K, 4.8K 7.2K, 4.8K	None	Yes	No			\$1,995 \$1,995
	V.32 Modem	V.29 V.32	Synch	Both	No	No Yes	4.8K	None Trellis	Yes No	No No	None None		\$1,595
Bytcom, Inc.	9.6 Trellis/V.32 Modeni	V.32, V.22, Bell 212	Both	Full	Yes	No	4.8K, 2.4K, 1.2K,	X.25 LAPB ³ , MNP, Trellis	Yes	No	Callback with	None	\$1,595
(415) 485-0700 Case Communications, Inc. (301) 290-7710	4632 EC, 4632 ADB	V.32	Both	Full	Yes (ADB	Yes	300 4.8K	Trellis (both), MNP (EC only)	Yes	No	None None	V.52, V.54 diagnostics	\$1,795 (EC)-\$2, (ADB)
	4696 VS	V.29	Both	Full	No No	Yes	7.2K, 4.8K, 2.4K	None	Yes	No	None	Self-testing, local and remote	\$1,395
	4144+	V.29, V.33	Synch	Full	Yes	No	None	Trellis	NP	Op- tional	None	Compatible with CASE Series 500	\$6,995
	4096+	V.29	Synch	Full	Yes	NP	7.2K, 4.8K	Trellis	NP	No		Compatible with CASE Series 500	\$2,995
Cermetek Microelectronics, Inc.	Spectrum 9600 Full Range	V.32, V.22 bis ⁴ , Bell 212A, 103	Both	Full	Yes	Yes	4.8K, 2.4K	Trellis, MNP, LAP	Yes	No	None	network management None	\$1,795
(408) 752-5000 Codex Corp.	Model 2206	V.29	Syuch	Both	No	No	7.2K, 4.8K	None	Yes	No	None	None	\$1,995
(617) 364-2000													E 130
	Model 2260 Model 2100	V.32 V.54	Both	Both	Yes	No	4.8K None	Trellis None	Yes	No	None None		\$1,995 \$335-\$1,250
	Model 2340	V.39	Both	Full	No	No	7.2K, 4.8K	None	No	No	None		\$1,650
	Model 3241	V.29	Synch	Full	No	No	7.2K, 4.8K	None	Yes	No	None	None	\$1,950
	Model 2362	V.33	Synch	Full	No	No	7.2K, 4.8K, 1.2K	Trellie	Yes	No	Password	None	\$3,195
	Model 2382	V.33	Synch	Full	Yes	No	None	Trellis	Yes	Yes	Password	None	\$7,250
	Model 2640	V.29, proprietary	Both	Both	Yes	No	7.2K, 4.8K	None	No	No	Password, encryption	Self-test diagnostics, loopback	\$5,200
	Model 2650	Proprietary	Both	Both	Yes	No	7.2K, 4.8K	Trellis	Yes	No	Password,		\$6,600
	Model 2660		Dut	Deal	V		M	D. W.			encryption	line-quality tests	
		V.29, proprietary	Both	Both	Yes	No	None	Trellis	Yes	No	Password, encryption	line-quality tests	DAYE OF
	Model 2680	Proprietary	Both	Both	Yes	NP	None	Trellis	Yes	Yes	Password, encryption	Self-test diagnostics, loopback and line-quality tests	\$12,400
Comdesign, Inc. (800) 235-6935	CM-9600	V.29	Synch	Full (four- wire), half (two-wire)	No	No	7.2K, 4.8K	None	Yes	No	None	None	\$1,395
Concord Data Systems, Inc. (800) CDS-BAUD	V.32 Trellin	V.32	Both	Pull	Yes	Yes	4.8K	Trellis	Yes	No	None	None	\$2,495
	296 Trellis	V.32	Both	Full	Yes	Yes	4.8K	MNP, Trellis	Yes	No	Password	None	\$1,795
CTS Fabri-Tek, Inc. Datacomm Division (800) 325-6104	CTS 9629 MX	V.29	Synch	Both	No	No	7.2K, 4.8K	Trellis	Yes	Yes	None	None	\$1,995
	CTS 9629 CTS 9629 Fast Poll	V.29	Synch	Both	No	No	7.2K, 4.8K	Trellis	Yes	No	None	### Sel Supplack ### Se	\$1,495
Data Race, Inc.	PC-Race 96	V.29 Proprietary	Synch Both	Both	No	No Yes	7.2K, 4.8K	Trellia LAPB	Yes	No	None None		\$1,995 \$795
Data Race, Inc. (512) 692-3909							111111111111111111111111111111111111111	The same of the sa					The second
	Race VM Models I and I		Asynch		No	No	2.4K	LAPB	Yes	Yes (Mode II)	None		\$1,495-\$1,695
	Race BMX-VM 1 Rally 9600-series	Proprietary V.29, V.27	Asynch Synch	Full or both, depending on model	No Yes	No Yes	4.8K 7.2K, 4.8K, 2.4K	LAPB None	Yes	No No	None Password, callback		\$995 \$1,195-\$1,795
DCB, Inc. (800) 637-1127	PL 9.6	V.29	Synch	Full	No	No	7.2K, 4.8K, 2.4K	None	Yes	No	None	None	\$1,400
(800) 637-1127	P1. 9.6 Plus	V.29	Synch	Full	No	No	7.2K, 4.8K, 2.4K	None	Yes	No	None	Diagnostics to check phone line	\$1,900
	PL 9.6 FP Plus	NA (Fast Poll)	Synch	Full	No	No	7.2K, 4.8K, 2.4K		-	-		phone equipment	
Digital Communications Associates, Inc.	DCA 930	V.29	Synch	Full	No	No	7.2K, 4.8K, 2.4K Name	None Name	Yes NP	Yes	None None	None Optional	\$2,300 \$2,400

IMNP: Microcom Networking Protocol **EDI: Electronic data interchange **LAPB: Bit-oriented link access procedure **his: Bisynchronous **LAP: Link access procedure **EIA: Electronic Industrial Association **IHDLC: High-level data link countrial Association **IHDLC: High-level data link countrial Association **IHDLC: Cyclic redundancy cheric **BERT: Bit error rate testing

The companies included in this chart responded to are cent telephone survey conducted by *Computerworld*. When a vendor is unable to provide specific information about its product, this is designated NP (not provided). When a question does not apply to a vendor's product, this is designated NA (not applicable). Further product information is available from the vendors.

SPOTLIGHT

COMPANY	PRODUCT	MODEM STANDARD	SYNCHRONOUS/ ASYNCHRONOUS	HALF/DUPLEX	DIAL BACKUP	SYNCHRONOUS DIAL COMMAND	FALLBACK SPEEDS (BIT/SEC.)	ERROR CORRECTION	LINE-QUALITY ADJUSTMENTS	BUILT-IN MULTIPLEXER	SECURITY FEATURES	NETWORK MANAGEMENT FEATURES	PRICE
Digital Equipment Corp. 800) 832-6277	DF129	V.29	Synch	Full	No	No	7.2K, 4.8K, 2.4K	None	Yes	No	None	None	\$2,336-\$2,573
Emulex Corp. 714) 662-5600	Performance 1000/9.6	V.29	Synch	Full	Yes	No	4.8K, 7.2K	None	Yes	No	None	Downline configuration loading	\$1,195
(714) 662-5600 Fastcomm Communications Corp. (800) 521-2496	FDX 9696	V.32, V.22 bis, Bell 103, 212A	Both	Full	NP	Yes	4.8K, 2.4K, 1.2K, 300	MNP, Trellis	Yes	No	None	None	\$1,579-\$1,599
	FDX 9624	V.32, V.22 bis, Bell 103, 212A	Both	Full	No	Yes	4.8K, 2.4K, 1.2K, 300	MNP, Trellis	Yes	No	None	None	\$1,279-\$1,299
	FDX 9600	V.32	Asynch	Full	No	No	4.8K	MNP, Trellis	Yes	No	None	None	\$1,179-\$1,199
	FDX 9600 FP 9600 Turbo	V.29 V.29	Synch Asynch	Half	Yes No					_			\$1,779-\$1,799
Fujitau America, Inc.	EZ series	V.29	Synch	Full	No	No	7.2K, 4.8K	Trellis	NP	No	None		\$995-\$1,795
(408) 432-1300	M1921 series	V.29	Synch	Full	No	No	7.2K 4.8K	None	Vec	No	Pasetunard		\$1,330-\$1,495
	M1923 series	V.29										configuration	
	M1923 series	V.29	Synch	Full	No	No	7.2K, 4.8K	None	Yes	No	Password	Remote diagnostics and configuration	\$1,730-\$1,895
	M1926 CMO1	V.29	Synch	Full	No	No	None	None	Yes	Yes	Password	Remote diagnostics and configuration	\$2,130
	M1927 series	V.29, V.33	Synch	Full	No	No	None	Trellis	Yes	Yes	Password	Remote diagnostics and	\$2,130-\$2,295
	M1928L	NP	Synch	Full	Yes	NP	None	Trellis	Yes	Yes	Password	Remote diagnostics and	\$4,495
Gammalink	Gammamodem	V.29	Synch	Half	Yes							configuration	\$1,495
(415) 856-7042												speed, line quality	******
	Gammacomm 9600 MC	V.29	Synch	Half	Yes	Yes	7.2K, 4.8K, 2.4K	None	Yes	No	Password	Information on calls, duration, speed, line quality	\$1,595
	Gammacomm II	V.29	Synch	Half	Yes	Yes	7.2K, 4.8K, 2.4K	None	Yes	No	Password	Information on calls, duration,	\$1,595
Gandalf Data, Inc. (800) GANDALF (312) 541-6060 (III.)	LDM 409	Proprietary, EIA ^e RS- 232C, V.24, V.28	Synch	Full	No	No	4.8K	None	Yes	Yes	Leased-line modern		\$895
(013) 042-0000 (111.)	LDM 419	Proprietary	Both	Full	No	No	4.8K	None	Yes	Yes	Leased-line modem	V.54 compatibility, test pattern	\$1,095
onersi Dataconon, Inc.	Access Series V.32	V.32, V.22 bis, Bell 212	Both	Fuil	Yes	Yes	4.8K, 2.4K, 1.2K	HDLC ⁷	Yes	No	None	V.54 compatible	\$1,900
	Fastrak 96PP	V.29	Synch	Full	No	No	7.2K, 4.8K	None	Yes	No	Leased-line modem	None Downline configuration loading None None None None None Remote diagnostics and configuration Information smalls, duration, speed, line quality Information on calls, duration, speed, line quality Information, line speed, line quality Information, line performance, loog tests Information, line perform	\$1,995
	Fastrak 96LH	V.29	Synch	Full	No	No	7.2K, 4.8K	None	Yes	No	Leased-line insulesion	Test pattern generator, error	\$1,650
General Datacomm, Inc.	GDC Dual Modem	Proprietary	Asynch	Pull	No	No	1.2K to 9.6K	None	No	No	None		8238
Janeral Datacomm, Inc. 203) 574-1118	Datacomm 2020	Proprietary	Synch	Full	No	No	2.4K to 9.6K	None	Ves	No	None	None	\$805
	DATX 2000 series	Proprietary	Asynch	Full	No	No	1.2K to 9.6K	MNP, compression, X.25	No	No	None		From \$305
	Datacomm 296	V.32	Both	Full	Yes	Yes	4.8K	MNP, LAP, Trellis	Yes	No	Port security		\$1,725
	LCM 1000 series Datacomm 9600 series	Proprietary V.29	Asynch	Full	No No			None		No	None		\$240-\$270 \$1,505-\$1,905
	Dealton 9600	V.29	Both	Full	No	No	7 9¥ 4 9¥	None	Vee	No	None		\$1,500
	Deaktop 9600 Multiport 9600	V.29	Both	Full	No	No	7.2K, 4.8K	None	Yes	Yes	None	Digital, analog loopback	\$2,395
	DC 500 series	AT&T Dataphone	Asynch	Full	No	No	4.8K. 2.4K	None	No	No	None		\$645-\$1,245
		Digital Service										diagnostics, self-test	A1 100 A1 000
Hayes Microcomputer Products, Inc. (404) 441-1617	V-Series Smartmodem 9600, 9600B	V.32, Bell 103, 212A, V.22 bis	Both	Both	No								\$1,199-\$1,299
IBM (800) IBM-2468	IHM 5865	V.29, V.27	Synch	Full	Yes	Yes	4.8K, 7.2K	LPDA 2	Yes	No	None	line status and testing, line	\$4,000
Incomm Data Systems, Inc. (312) 459-8881	Superlink 9600	V.29	Synch	Full	No	Yes	7.2K, 4.8K	Trellis	Yes	No	None	None	\$1,495
Infinet, Inc. (617) 881-0600	V.32 Trellis	V.32	Both	Full	Yes	No	4.8K	Trellis	Yes	No	None	None	\$2,375-\$2,495
(617) 881-0600	IDM 9600	V.29	Synch	Both	Yes	No	7.2K, 4.8K	None	Yes	Op- tional	Front-panel lockout	diagnostics, restoral, line	\$4,000-\$4,100
	IDM HFP (Fast Poll)	V.33	Synch	Both	Yes	No	4.8K	Trellis	Yes	No	Front-panel lockout	Remote configuration, diagnostics, restoral, line	\$6,400-\$6,500
Missim Systems, Inc. (800) MICOM-US	M4096/V.29+	V.29	Synch	Full	No	No	7.2K, 4.8K	None	No	No	None		\$2,450
(800) MICOM-US Microgate Corp.	Synclink 96E	V.29	Synch	Both	Yes	-							\$1,495
(512) 345-7791	7												
Mux Lab (800) 361-1965	Fastware	V.29, V.22, V.22 bis, Bell 103, 212A	Asynch	Full	Yes	No		MNP	Yes				\$895
Multi-Tech Systems, Inc. (612) 631-3550	Multimodem208	Bell 208A, 201B, V.26 bis	Both	Both	No	Yes	2.4K	None	Yes	No	None	None	\$1,195
2-11-5-11-12V	Multimodem V.32	V.32, V.22 bis, V.22,	Both	Both	No	Yes	4.8K	MNP	Yes	No	None	None	\$1,495
	Multimodem696E	Bell 212A, 1463 V.22 bis, V.22, Bell	Both	Both	No	Yes 4.48K None None	None	\$1,295					
	MultimodemV29	212A, 103 V.29, V.27	Both	Both	No					_			\$1,395
NEC America, Inc.	SPN 9600	Proprietary	Synch	Full	No							Networking monitoring,	\$4,195
(408) 433-1250	DSP9630	V.32	Both	Full	Yes	No	4.8K	Trellis	Yes	No	Password	Modem status indication, EIA interface display, local and remot	\$1,895
	SPN 9400M	Proprietary	Synch	Full	No	No	7.2K, 4.8K	None	Yes	Yes	Password	loopback test	\$4,795
Network Devices, Inc. (617) 888-5206	Ready-Link	V.24, RS-232	Both	Full	No	No	Jumpable from 0 to 9.6K	None	Yes	No	NP .		\$195
Paradyne Corp. (800) 482-3333	3440 series	V.29, proprietary	Both	Full	Yes	No	9.6K 7.2K, 4.8K	None	Yes	Yes	Key sequences	Diagnostic monitoring, testing, control	\$3,450
(800) 342-1140 (Fla.)	Datalink 9600	V.29, V.27	Both	Both	Yes	No	7.2K, 4.8K, 2.4K	MNP	Yes	No	Front-panel lock		\$1,765-\$1,795
Peerd Intacomm (800) 638-8905	HEAT PARKET	U.S. Company								No			
	9600 FT Alliance V.32	V.29, V.27 V.32, V.22 his, Bell 212 103	Both Both	Both Full	Yes.	No	7.2K, 4.8K, 2.4K 4.8K	MNP	Yes	No	Front-panel lock		\$1,965-\$1,995 \$1,595
						100							

COMPANY	PRODUCT	MODEM STANDARD	SYNCHRONOUS/ ASYNCHRONOUS	HALF/DUPLEX	DIAL BACKUP	SYNCHRONOUS DIAL COMMAND	FALLBACK SPEEDS (BIT/SEC.)	ERROR CORRECTION	LINE-QUALITY ADJUSTMENTS	BUILT-IN MULTIPLEXER	SECURITY FEATURES	NETWORK MANAGEMENT FEATURES	PRICE
Philips Information Systems, Inc. (800) 443-6004	V.32-PC Card	V.32	Both	Full	No	Yes	4.8K	Trellia	Yes	No	None	None	\$1,295
	V.32 Continental	V.32	Both	Full	Yes	Yes	4.8K	Trellis	Yes	No		None	\$1,995
	Sematrans 9696	V.32	Both	Full	Yes	Yes	4.8K, 2.4K	MNP	Yes	No	None	None	\$1,796
	Sematrans 9631	V.29	Both	Fuli	No	No	7.2K, 4.8K	MNP	Yes	Yes	None	Download configuration, diagnose analog lines	\$1,495
	Sematrans 14431	V.33	Both	Full	No	No	7.2K, 4.8K	MNP	Yes	Yes	None	Download configuration, diagnose analog lines	\$2,595
Racal-Milgo (305) 475-1601	RM-9632	V.32	Both	Full	Yes	Yes	4.8K	Trellis	Yes	No	None	Statistical reporting, continuous unattended polling of installed modems, continuous status display of modems	\$1,995
	RM-9629	V.29	Both	Full	Yes	No	7.8K, 4.8K	None	Yes	Yes	Password, encryption	None	\$1,850
	Omnimode 96	V.29	Both	Full	Yes	No	7.2K, 4.8K	None	Yes	Yes	Password, encryption	Compatible with Racal-Milgo Communication Management System	\$3,250
Raus) Vadic	VA9612	V.29, Bell 212, 103	Both	Both	Yes	Yes	7.2K, 4.8K, 1.2K, 300	MNP	Yes	No	None	Built-in diagnostics	\$995
(800) 482-3427	9650PA	V.29	Synch	Full	Yes	Yes	7.2K, 4.HK	None	Yes	No	None	Local reconfiguration, diagnostics, remote testing	\$1,695
	9600VP	V.29, proprietary	Both	Both	No	No	7.2K, 4.8K, 1.2K, 300	MNP	Yes	No	Prestored, automatic dialing	Full range of diagnostic tests	\$995
Symplex Communications Corp. (313) 995-1555	Quantum Plus 19.2, ZR.B	V.29, V.27, proprietary	Both	Full	Yes	No	7.2K, 4.8K	Trellis	Yes	Yes	None	Localized hardware failures, identify trends, anticipate and correct impending response-time slowdowns	\$7,450-\$9,950
Telcor Systems Corp. (617) 653-3995	Accelerator 2938	V.29	Asynch	Both	Yes	No	4.8K, 2.4K, 1.2K, 300	MNP, Telcor CRC-16	Yes	No	Password, callback, encryption	Audit trail, remote configuration	\$1,195
Telebit Corp. (800) TELE-BIT	Trailblazer Plus	V.22 bis, V.22, Bell 212A, 103J, proprietary	Asynch	Full	No	No	Increments of 100	MNP, PEP®	Yes	No	None	Remote diagnostics and control, central site management	\$1,345
	T2000	V.22 bis, V.22, Bell 212A, 103J, proprietary	Both	Full	No	Yes	Increments of 100	MNP, PEP	Yes	No	None	Remote diagnostics and control, central site management	\$1,495
Telenetics Corp. (714) 779-2766	TC 921SIR	V.32, V.22 bis, V.22, Bell 103	Both	Full	Yes	No	4.8K	MNP	Yes	No	Optional callback	None	\$1,495
	ED9.6	V.29	Synch	Full	No	No	7.2K, 4.8K	None	Yes	No	None	None	\$1,495
	ED9.6 FP	V.29	Synch	Full	No	No	7.2K, 4.8K	None	Yes	No	None	None	\$1,895
Universal Data Systems, Inc. (205) 721-8000	9608S	V.29	Asynch	Fill	No	No	50 to 9.6K	None	Yes	Yes	None	Remote, local and digital loopbacks, self-test parameters	\$2,695
	Model V.32	V.32	Both	Full	No	No	4.8K	Trellis	Yes	No	None	Remote, local mid digital loopback self-test	\$1,595
	Model 9604T	V.29	Both	Full	No	No	4.8K, 2.4K	None	Yes	Yes	None	Remote, local and digital loopback self-test	\$2,495
	Sync-Up T9628B	V.29, proprietary	Synch	Half	No	Yes	7.2K, 4.8K	Trellis	Yes	No	None	Self-test	\$1,540
	Model 9648T	V.29	Both	Both	No	Yes	Selectable to any	Trellis	No	No	Front-panel lockout	Remote, local and digital loopback self-test	\$1,995
	Model 9600FP/AS	V.29	Both	Full	No	No	7.2K, 4.8K	None	Yes	No	None	Remote, local and digital loopback self-test	\$1,995
	9600 Trellis A/B	V.20, proprietary	Synch	Both	No	No	4.8K	Trellis	Yes	No	None	Remote, local and digital loopback self-test	\$1,995
U.S. Baberica, Inc. (312) 982-8991	Courier HST	Proprietary	Asynch	Full	No	No	7.2K, 4.8K	Trellis, HSI error control protocol (proprietary)	Yes	No	None	None	\$995
Ven-Tel, Inc. (800) 538-5121	Pathfinder INK	IPEP ⁴ (proprietary)	Asynch	Half	No	No	Increments of 100 bit/sec.		Yes	No	None	Remote configuration	\$1,399
Western Datacom (800) 262-3311 (216) 835-1510 (Ohio)	432 Line Backer (avail.	V.32	Both	Full	Yes	No	7.2K, 4.8K, 2.4K	MNP	Yes	No	Password, callback	Remote diagnostics, configuration, BERT ²⁰ testing	\$1,095
(0.00)	432 Network Node (avail. Wildl)	V.32	Both	Full	No	No	7.2K, 4.8K, 2.4K	MNP	Yes	No	None	Remote diagnostics, configuration, BERT testing	3995

T1 FROM PAGE S12

Infostream 1500
Byte-interleaved TDM supports
128 voice/data channels with a maximum data rate of 1M bit/sec. Automatic alternate routing. Point-to-point, drop-and-insert, bypass, duallink and ring configurations.

Intraplex, Inc. (617) 486-3722 TDM-150 Series T1 Multiplexer Available as full-duplex or two-way drop-and-insert multiplexer. Combines voice/data and high-fidelity digital audio in a single T1 carrier using 24 digital time slots.

Megaring Corp. (516) 435-4666 Fault-tolerant T1 ring architecture with up to eight nodes per ring: drop-and-insert capabilities; up to

eight channel asynchronous data circuits per card, allowing up to 192 lines per ring; synchronous data rates up to 64K bit/sec.; integration of voice, asynchronous and synchronous data interfaces.

Micom Systems, Inc. (805) 583-8600 Digital Wideband Exchange Resource-management system for voice, synchronous and asynchronous data and other high-speed digi-tal applications. Eight T1-trunk capacity.

Network Equipment Technologies, Inc. (415) 366-4400 IDNX/70 Connects voice/data and video equipment among multiple locations. Supports up to 96 T1 trunk modules, 768 active voice calls and 400 active data calls.

IDNX/40 Functionally similar to and compatible with IDNX/70. For connecting

lower volume locations to IDNX backbone network. Supports up to 15 T1 trunk modules.

IDNX/20 Connects voice/data and video equipment among multiple locations. Supports up to eight T1 trunk modules.

(813) 530-2000 3210 series Bit- or byte-interleaved TDM with point-to-point operation. Combines a 96-circuit T1 channel capacity with networking capabilities for transmission of voice/data, facsimile and video. Mixed input speeds up to 1.5M bit/sec.

3230 Nodal Processor Software-driven intelligent bit-in-terleaved T1 multiplexer supports 508 voice/data and video channels per node.

Pulaecon (800) 841-1005

Paradyne Corp

PD4 T1 Multiplexer

Handles up to 48 channels of analog voice and analog or digital data. Toll-grade performance suitable for all types of trunks.

Racal-Milgo (305) 475-1601 Omnimux 8010 Nibble-interleaved, Nibble-interleaved, point-to-point TDM for voice, synchronous data and digitized video communications. Up to 48 channels per node.

Omnimux 9000 Networking T1 multiplexer for inte-grated voice/data and video networking supports up to 36 T1s

Omnimux CBI Voice/data TDM for up to 96 chan-nels available in 24- or 48-channel

Omnimux T1 Bit-interleaved TDM with up to 44channel capacity for voice and syn-chronous and asynchronous data.

Tellabs, Inc. (312) 969-8800 Crossnet System

Time-division multiplexing of input from up to 128 voice/data or compressed video channels into T1 facil-

Teltone Corp. (800) 426-3926

Handles voice and data. Supports 144 asynchronous data channels at 9.6K bit/sec. and 24 synchronous channels at 64K or 56K bit/sec. per T1 line. Full redundancy, drop-and-insert capabilities and four levels of password security.

Timplex, Inc. (201) 391-1111 Link/100 series High-capacity T1/E1 (North American CCITT) resource manager. Up to 144 T1 intermachine network links and up to 15,000 voice/data

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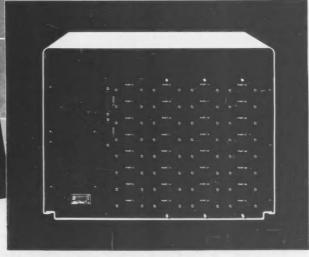
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SYSTEMS & PERIPHERALS



Stanley Gibson

Software cushions DEC



Is DEC cooling off? Even if it is. it doesn't mat-

If DEC is headed for a flat period, or is in

one now, what it has accomplished during the past several years has put it in a position to avert the negative effects of even a sharp downturn. DEC's strong performance has convinced major software vendors to commit large amounts of resources to developing important new software products for VAX hardware.

Some of these package such as Cullinet's IDMS/SQL, have been released; others are still on the drawing board. But as these products come into use in the months and years ahead, they will provide an afterburner effect on DEC's growth that will tend to compensate for any slowdown that may now be taking place.

In the past, IBM has reaped the benefits of the availability of a wide variety of outstanding software applications. Software availability has often sold hardware for IBM when the hardware could not sell itself. DEC now stands ready to gain in a similar way. What DEC has

Continued on page 56

Conversion all in a day's work

TRW executes rapid switch from AT&T to Unix-based Sequent systems

BY JEAN S. BOZMAN

CLEVELAND - Score one for

Record Data, Inc., a subsidiary of TRW, Inc., found that AT&T Unix System V portability made possible a nearly instant hardware conversion during a recent installation of order entry

The portability of applications written under the Unix operating system has been widely touted as a distinct advantage by Unix-based systems vendors. But that portability has been equally scorned as snake oil, or essentially misleading, by Digital



Record Data's Schrade

Equipment Corp. President and Chief Executive Officer Ken Olsen, whose interest is primarily in selling the proprietary VMS operating system.

The experience of Record Data, one of the nation's largest title insurance agencies and real estate appraisal companies, runs counter to Olsen's assertion, which is shared by others in the

The conversion from AT&T 3B15 computers to Sequent Computer Systems, Inc. Balance 8 (B8) machines took little more than a day, according to Richard Schrader, senior vice-president of Record Data's MIS group. We brought the 3B15 machines down on a Friday and had everything working smoothly by Monday morning.

Continued on page 55

XPS-100s replaced

BY STANLEY GIBSON

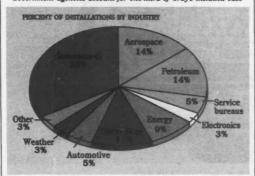
MINNEAPOLIS - Honeywell Bull, Inc. recently replaced the three models of its Unix-based XPS-100 family of multiuser computers intended for small business and departmental computing. The company's new systems support from four to 96 users; the previous systems supported up to 64 users.

The single-processor XPS-100 Series Models X-15 and X-22, together with the dual-pro-X-42, run Honeywell Bull's version of AT&T's Unix

Continued on page 56

Data View

U.S. of Cray? Government agencies account for one-third of Cray's installed base



Convergent offers mix

BY J. A. SAVAGE

SAN JOSE, Calif. - As part of a deluge of products unveiled at a recent rollout. Convergent Technologies, Inc. introduced terminals, printers and servers.

The vendor, whose fortunes have ridden a roller coaster of ups and downs in the past few years, made the announcements with the aim of reversing a twoyear, \$65 million losing streak.

Convergent's S/80 adds a new entry level to the company's Unix-based "S" series. The S/80 supports 16 users; earlier models support up to 128 users. The S/80, as well as the rest of the S series, can use new random-ac-

or 16M-byte versions.

The base S/80 configuration includes eight RS-232 ports, a cartridge tape drive, 2M bytes of memory and a 40M-byte disk drive that can be expanded to 320M bytes. The server is based

Continued on page 54

Inside

• Memorex Telex unveils display terminals. Page 54. • EMC designs solid-state storage system for IBM mainframes. Page 55.

• Cyber adds turnkey data acquisition and analysis system. Page 57.

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syncula Jobin, Bota, or other special software. Output can be in black or up to eight colors. Fully integrated (no boxl), the ISI 7224 connects directly IBM 3174/3274/3276 controllers or S/3X twinaxial cable.

Forms-handling advantages include automatic paper parking, no-waste demand-document tear-off, and a straight path for stiff forms. No extra-cost gadgets are required. Extra features and all, the ISI 7224 costs much less than

its IBM counterpart. For more information, call **1-800-544-4072** (in Michigan, 313/769-5900). Or write.

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► The ISI 7224 prints # 53.7 dBA — quieter than the IBM 4224. And since it's only seven inches tall, it fits

Memorex Telex displays terminals

TULSA, Okla. — Adding to the variety of peripherals it offers for IBM System/36 and 38 processors, Memorex Telex, Inc. recently announced three display terminals.

Currently shipping, the Memorex Telex 1196 A/B is a 12-in. monochrome display for Sys-

tem/36 and 38 users. Available with a green or amber screen, the system can operate with either 102-ur 122-key keyboards.

The terminal offers a hostaddressable print function, which the vendor said allows several users to share one printer, such as the Memorex Telex 1201 display printer

The 1196 A/B is available with a choice of a 90-day, oneyear or three-year warranty. List price for the unit with a 90-day warranty is \$1.185.

The 1197/C color display is slated to be available late this month. The 14-in. terminal of-

fers dual display sessions or one display session and one host-addressable print session, along with screen printing capability.

The 1197/C supports both 102- and 122-key keyboards. The screen displays 24 lines by 80 characters in either seven- or two-color mode.

The display supports all IBM 3197C features, according to the vendor. The list price for a

single unit with a 90-day warranty is \$1,845.

The Memorex Telex 1197D/E is a 14-in. mono-chrome display that supports dual sessions and host-addressable printing. The terminal's command keys may be customized.

The terminal supports both display sizes of 24 lines by 80 characters and 27 lines by 132 characters. The 1197D/E also features split-screen mode, with 24 lines in one session and 17 lines in the other.

Memorex Telex said the 1197D/E will be available in midsummer. A single unit with a 90day warranty is priced at \$1,635.

Convergent FROM PAGE 53

on Motorola, Inc.'s 68020 microprocessor running at 16.7 MHz. It operates on Convergent's port of AT&T's Unix System V. CTIX.

Shipments of the server, including the memory cards and the company's remote I/O processor, will begin in July, according to the company. The server will cost between \$7,000 and \$10,000, depending on configuration.

The new ServerPC Model 100 will support four to 16 personal computer or terminal users in a Unix environment while also running DOS applications. Previous models support eight to 32 users.

Based on Intel Corp.'s 80386 processor, the Model 100 can be configured with 2M to 12M bytes of memory, four to 28 ports and from 40M to 400M bytes of internal storage. The system also includes a 150M-byte cartridge tape drive and Convergent's CTIX operating system. The ServerPC will list for about \$7,500, depending on configuration.

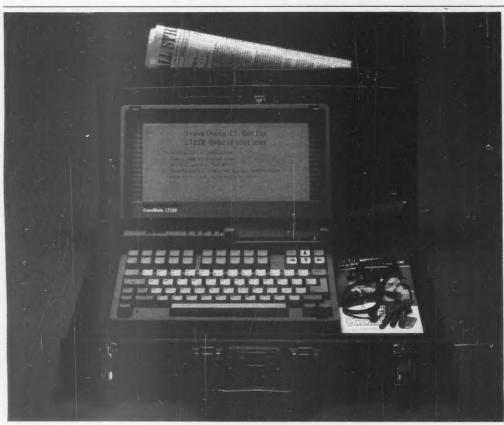
Printers inked

Convergent is also offering matrix printers — a new product line for the company.

Three printers, the CT-2475, the CT-2450 and the CT-2425, are aimed at applications such as demand-document preparation and office automation. All have 24-wire printheads and support any of Convergent's products.

The printers range from the 2475 with 486 char./sec. to 288 char./sec. in draft mode. The high-end printer can handle eight-part forms, while the lowend printer is geared toward word processing and single-sheet printing. Convergent would not give prices for these models.

A new terminal, the TO-250, was designed to be used with the S series Unix System or the ServerPC. Convergent did not give a price for the new terminal.



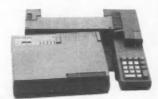
TI's new TravelMate" LT220. It's the closest thing to carrying a VAX" in your briefcase.

Texas Instruments introduces the LT220 lap-top terminal — the next best thing to being there when you need remote access to your company's VAX.

The LT220 provides full VT220 emulation in a 4.8-lb. package, without sacrificing functionality. It features a 25-line screen that è easy to read. It even has a full-function keyboard like the one on a VT220.

The terminal communicates at 1,200 or 2,400 bps through one of its optional internal modems. For hard copy, just slide the LT220 into one of its optional cradles to add an ink-jet or thermal printer.

New credit-card-sized memory cards



let you create, update and store files. They're also handy for programming the LT220 to your specific application.

Like its Silent 700" predecessors, the LT220 sets new standards for portability, durability and reliability. All of which makes it the perfect tool for anyone who's ever wished for a VAX in their briefcase. In short, this may be the best little terminal in the world.

So go ahead. Take the first step toward improving your productivity today. Call Texas Instruments for more information or to arrange a demonstration of the LT220. **Phone toll-free**, 1-800-527-3500.



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Conversion

CONTINUED FROM PAGE 53

Sequent's Dynix operating system provides support for Unix System V but has functional extensions, Schrader said.

Only two problems marred the February conversion: one CPU within a single Sequent machine malfunctioned and had to be replaced, and one tape drive broke We were able to continue processing by turning off the malfunctioning CPU board," explained Mohamed S. Osman, manager of office automation.

The conversion followed a seven month testing period on a Sequent Balance 21 (B21) machine, which has 12 internal CPUs and 32M bytes of memory. Since then, three more B8 machines have been installed at Record Data sites, bringing the total number of Sequent machines installed to 11. That is only one-third as many as Schrader said he would like to have in place by next year.

The replacement of the older 3B15 Unix machines with the Sequent units is part of a larger automation effort. The goal of the program is to bring on-line order entry to 40 of Record Data's 65 of-fices nationwide. "Each machine will be able to dial up every other machine so that we can transfer information quickly across the country," Osman said. Software applications will allow computers to automatically update data bases in other machines, he added.

Record Data launched its office automation project early last year, using 3B15 machines running Unix System V. Each hosted a data base from Unify Corp. All applications were written by Record Data's four staff programmers in the Cleve-land office, Schrader said.

But the automation effort bogged down when response times lagged, Schrader recalled. When 15 to 20 people were actively using each 3B15 system, response times surged to between six and 10 seconds.

Last summer, Record Data began evaluating faster Unix machines that had the capability to offer better response times. Under the Sequent systems, response time is two to three seconds or better. Schrader noted.

Response times are critical to Record Data's business. Large numbers of trans actions involving real estate appraisals and credit authorizations must be processed each day.

Computers in various states are connected to each other and to a central host in Cleveland. The data bases on the various systems around the country will update the host data base periodically, using a nationwide network.

Record Data's offices are now located in Baltimore, Boston, Cherry Hill, N.J., Mineola, N.Y., Miramar, Fla., Philadelphia, Rochester, N.Y., and Wheaton, Ill.

Research turned up Sequent
After a thorough search of Unix offerings from Hewlett-Packard Co., Digital Equipment Corp. and Sun Microsystems, Inc., Record Data decided on Beaverton, Ore. based Sequent's Balance machines

Record Data purchased one B21 and seven B8 systems for a total of \$1.3 million. Each B8 system has eight CPUs and is configured with 18M bytes of memory and 32 to 64 I/O ports. The B8s are rated at approximately 4 million instructions per second (MIPS), Schrader said, while the B21 is reportedly capable of 32 MIPS.

Two primary reasons for choosing the Sequent systems were their support for Unix V applications and their parallel processing architecture, which Record Data has not yet exploited. "We think our REX Plus custom application, which has 250,000 lines of code, would run much faster if we ran the machines in a parallel-processing mode," Osman said.

Another consideration is the ease with which the Sequent machines can be restarted after a power failure. "We don't have any uninterruptible power systems right now," Schrader said, "and in some states, there are frequent power failures as many as one to two power hits a day during the summer. The beauty of the Sequent system is that it only takes five minutes to boot."

EMC designs IBM storage subsystem

BY STANLEY GIBSON

HOPKINTON, Mass. - EMC Corp. recently announced a solid-state storage subsystem designed to work with IBM and plug-compatible mainframes.

The EMC Quantum provides 16M to 544M bytes of storage and is ideally suited to users of IBM 4300-type systems, according to Dan Maga, vice-president of marketing for mainframe products at

The device can perform either IBM 3370 or 3380 emulation and can operate at a transfer rate of 4.5M byte/sec. as well as at 1, 1.5, 2 or 4M byte/sec., according to EMC. The device has an access time of 0.1 msec, which the vendor claimed is the fastest for solid-state devices intended to connect to IBM channels.

Although the maximum capacity for one unit is 544M bytes, units can be daisychained together for up to 2.72G bytes of capacity. Memory may be added in 16Mor 64M-byte units.

The device attaches to an IBM or plugcompatible computer block multiplexer channel using standard cables.

Currently shipping, the price for a 16M-byte unit is \$27,400. A 128M-byte subsystem is priced at \$184,200.



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For over a decade, CompuServe has worked with Sherwin-Williams to impl ment systematic solutions to communications problems. Currently, hundreds of employees across the country depend on CompuServe for local dial access to the central Sherwin-Williams data center in Cleveland, Ohio.

According to The Sherwin-Williams Company, "We selected CompuServe because of the reliability, performance and economic advantages their network would bring us. CompuServe has continually

provided us with the services that have met the critical communications needs of our organization."

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- Real time remote diagnostics.
- · Full backbone and switch redundancy.
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- 5250, and POS protocols
- Gateways to international public data networks.
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XPS-100s

System V, Release 3.

The systems, which Honeywell Bull said will be sold directly to end users as well as through OEMs, take the place of the 2-year-old XPS-100 Series Models 10, 20 and 40.

The older systems used the Motorola, Inc. 68010 microprocessor. The new systems are based on Motorola's 68020 chip.

The entry-level Model X-15 supports from four to 32 users. Main memory can be increased from 2M to 16M bytes, and the vendor said the system is fieldupgradable to the dual-processor Model X-42.

High-end options The Models X-22 and X-42 can support from eight to 96 users, and the X-22 can be upgraded to the X-42.

The X-22 and the X-42 include an integrated tape and disk controller, a 1.2M-byte Microsoft Corp. MS-DOS and OS/2compatible diskette drive and an integrated 60M-byte streaming tape drive.

Memory on the Model X-22 may be expanded from 4M to 16M bytes. Memory on the X-42 can be expanded from 8M to 32M bytes, according to Honeywell Bull.

Disk space on the X-22 can be expanded to 807M bytes with a 325M-byte fixed-disk unit, and the X-42 can be expanded up to 1.8G bytes.

The Model X-15 is priced from \$12,074 for a four-user configuration, including a 16.7-MHz 68020 microprocessor, 2M bytes of memory and 72M bytes of fixed-disk storage. The system is available immediately.

The Model X-22 is priced from \$20,495. That price includes a 16-user system with 4M bytes of memory and 157M bytes of disk storage.

The Model X-42 starts at

\$41,495 for 32 users. The system includes dual processors. 8M bytes of memory and 157M bytes of fixed-disk storage.

Honeywell Bull also an-nounced the availability of a software porting tool, RPG-II/36, that is intended to convert applications written for the IBM System/34 and 36 to the XPS-100 Series models.

Power play

In addition, Honeywell Bull announced an optional high-performance package for the Models X-22 and X-42 that upgrades the new models from the standard 16.7-MHz 68020 microproces sor to a 68020 running at 25 MHz.

According to the company, the X-22 and X-42 will be available in July. The 25-MHz highperformance upgrade package is expected to be available in the fourth quarter.

Gibson

done in the past several years is to go from a company fighting it out with archrival minicomputer makers Data General, Wang Laboratories and Hewlett-Packard, to competing largely with IBM. Historically a thorn in DEC's side, DG has fallen farther and farther behind. DEC has attained the status of a company that is secure for users and developers to invest in.

When DEC issued its most recent quarterly results, which showed a lowering rate of profit growth, it spawned articles that predicted a DEC slowdown and said such a slowdown had already arrived. Some consultants got the jump on the press, having be-

gun their Cassandra act several months ago.

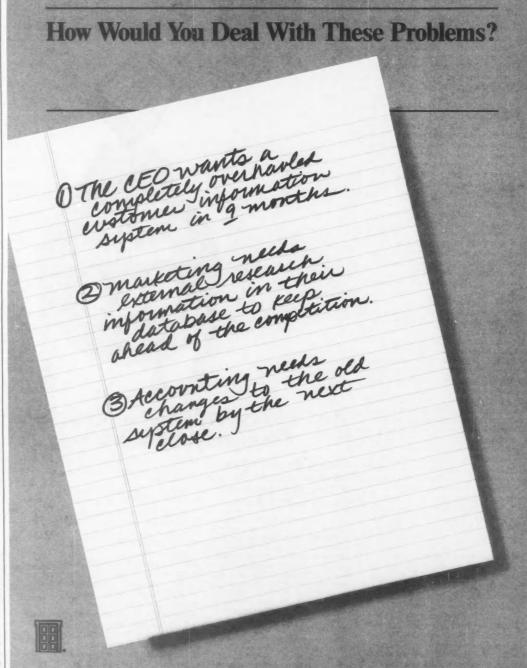
In reality, DEC's long-term stability is not going to be greatly affected by relatively minor fluctuations distorted by the looking glass of Wall Street.

The trend in software development for the VAX assures that DEC will cement its position in the computing industry and that it will, in all probability, stay

there for many years to come.

Its software base will make it very difficult to dislodge from that slot, despite the renewed efforts of HP and others to do so. Those competitors will find themselves facing the kind of immovable object that IBM has become to so many.

Gibson is Computerworld's senior editor, systems & peripherals.



NEW PRODUCTS

Turnkey systems

A turnkey Intel Corp. 80386based data acquisition and analysis system has been added by Cyber Research, Inc.

The fully configured system reportedly acquires data on up to

16 channels at up to 1-MHz samples per second and is especially suited for research and testing laboratory environments.

The product is said to be capable of storing 90,000 samples per second continually to disk. Menu-driven software is included with the unit to allow data

conditioning, real-time signal averaging and spectrum analysis.

A 44M-byte high-speed disk, a 1.2M-byte floppy disk and 2M bytes of random-access memory are also included.

The 16-MHz 80386 CPU costs \$13,995.

Cyber Research, P.O. Box 9565, 5 Science Park Center, New Haven, Conn. 06536. 203-786-5151

Processors

A memory and simulation logic accelerator has been introduced by Aida Corp.

The Aida Cosim/ML processor has a reported capacity of up to eight million gates and is said to operate at speeds of up to 10 million evolution/sec. Physical memory modeling is accomplished via plug-in boards, and the product is constructed around a gate array implementation for use as a network resource. The processor is housed in a stand-alone 26- by 14- by 24in. cabinet.

The Aida Cosim/ML costs from \$135,000 to \$275,000, depending on configuration.

Aida, 5155 Old Ironsides Drive, Santa Clara, Calif. 95054. 408-980-5200.

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Graphics systems

A series of document image processor workstations has been added by Document Technologies, Inc. for sale to OEMs and value-added resellers.

The **DP-200** and **DP-400**, which convert paper documents into electronic images, run under a proprietary extended modem multitasking operating system, XMOS.

Available in configurations for IBM Personal Computers running Microsoft Corp. MS-DOS and Digital Equipment Corp. VAX/VMS environments, the workstations operate in standalone, terminal emulation or local-area network environments.

The DP-200 and DP-400 cost from \$6,000 to \$20,000, depending on configuration.

Document Technologies, 2465 E. Bayshore Road, Palo Alto, Calif. 94303. 415-858-0372.

Data storage

Unisys Corp. has lowered prices on three disk drive subsystems by an average of 24%.

The B 9399-E dual-string controller now costs \$99,400, down from \$129,150. The prod-Continued on page 58



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Continued from page 57

uct has one fixed inbuilt disk with 5G bytes of unformatted disk. The B 9494-24 double-density thin-film disk also has 5G bytes of unformatted fixed disk. It has been reduced from \$98,140 to \$70,000. Both controllers are available for Unisys medium and large-scale A and V series mainframe computers.

The 8494 multidisk subsystem has 616M bytes of inbuilt disk and has been

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Netec International, Inc. P.O. Box 180549 • Dallas, Texas 75218 Telex 314419 TELECOM UD (214) 343-9744

reduced from \$40,000 to \$36,000. The 8494 is available on System 80 Models 8, 10 and 20 computers.

Monthly maintenance charges on all three products have been reduced 36%. Unisys, P.O. Box 500, Blue Bell, Pa.

19424. 215-542-4011.

Tab Products Co. has enhanced its software for writing image and index information to optical disk storage. The updated

package is included with the company's Laser-Optic Filing System series.

Users can reportedly write the index to the document onto both the hard and optical disks simultaneously under Release 5.2 of the software. Once archived, the index information on each optical disk can be searched without using the entire data base.

The Laser-Optic Filing System costs from \$49,995 to \$69,995.

Tab Products, 1400 Page Mill Road, Palo Alto, Calif. 94304. 415-852-2500.

An 8mm tape-storage subsystem that reportedly offers 9.2G bytes of unattended backup in one cabinet is available from Summus Computer Systems.

The Gigatape 9.2 is said to be compatible with Q-bus and Unibus architectures and provides a maximum data throughput of 984K byte/sec. Rates for unattended backup range from 24M to 60M byte/min, depending on system configuration.

The Gigatape 9.2 costs \$18,175 for a Q-bus, rack-mount model.

Summus, P.O. Box 820549, Houston, Texas 77282. 800-255-9638.

Terminals

An intelligent data collection terminal that also functions as an IBM 3278-2 and IBM 3178-C2 display station has been announced by **Epic Data**.

When in IBM emulation mode, the Model 1647-531 Full Screen Terminal allows users to access host applications and enter data with a variety of input devices, including a bar-code wand, a barcode slot, a magnetic stripe slot or a laser scanner. Up to 30 transaction definitions can be stored in battery-backed memory, and the screen displays up to 1,920 characters plus a status line.

The 1647-531 Full Screen Terminal costs \$3.995.

Epic Data, 7280 River Road, Richmond, B.C. V6X 1X5. 604-273-9146.

A composite viewing terminal for Digital Equipment Corp. VAX/VMS sites using the Tex typesetting language has been announced by Talaris Systems, Inc.

The Talaris 7600 provides bitmapped display with 1,024- by 780-pixel resolution. The product is configured with 512K bytes of random-access memory and 28 proportional fonts in a 196Kbyte read-only memory.

Emulation capabilities include the Tektronix, Inc. 4014 and the DEC VT220,

the vendor said.

The Talaris 7600 is priced at \$1,995.

Talaris, 6059 Cornerstone Court W.,
San Diego, Calif. 92126. 619-587-0787.

Power supplies

A family of power protection peripherals has been introduced by Deltron, Inc. The Tri-Port series of uninterruptible power supply systems pass AC input through a switch to a hold-up transformer, which regulates and filters voltage to the output and load.

There are five models in the series, providing 750-, 1,000-, 1,500-, 3,000- and 5,000-VA output power. The emergency running time is up to 45 min at half load and up to 25 min at full load.

The Tri-Port series costs from \$2,025 to \$6.995.

Deltron, P.O. Box 1369, North Wales, Pa. 19454. 215-699-9261.

International Computer Power, Inc. has released the Rotoplus line of frequency converters, load and line isolators and uninterruptible power systems designed specifically for Tempest Technologies, Inc. applications.

In addition to providing protection from electrical disturbances, the product offers load-to-line isolation in excess of 120db, ensuring against unauthorized access to classified or confidential informa-

Units start at 1 kVA single-phase for minicomputers and microcomputers and go through 250 kVA three-phase for mainframe systems.

The product line does not require

maintenance or air-conditioning.

Prices for the Rotoplus line range from

Prices for the Rotoplus line range from \$3,000 to \$75,000.

International Computer Power, 501 S. Michillinda Ave., Pasadena, Calif. 91107. 818-793-8656.

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IN DEPTH

Du Pont: An information leader

With one eye always focused on the pragmatic, Du Pont computerizes its scientific research

e set out to be the best at what we do," says John H. Taylor, manager of Du Pont Co.'s Scientific Computing Division. "Right now, we know we're good, but we're still trying to be

Taylor's group is trying in characteristic Du Pont manner: with an emphasis on pragmatism. If technology for technology's sake were to rear its head anywhere, it might be in a department that deals with scientific computing and boasts the largest production Digital Equipment Corp. Vaxcluster in the world. But there, as elsewhere in the company, the reigning philosophy is achieving better business through technology.

"I don't see ours as a 'scientific computing story' so much as an 'end-user story,' " says Taylor, a 26-year Du Pont veteran who was chosen in 1983 to head the then-new Scientific Computing Division. His mission is to find, evaluate and implement computer technologies that bring competitive advantage to scientific users, whose numbers have grown from 1,000 in 1984 to more than 6,400 in January.

Not an easy task

Setting up the division "was a politically difficult situation,' Taylor recalls, "so we called in a consultant." IBM was selected from among eight candidates for the job and worked with Du Pont's task force for seven weeks to come up with the recommendations that ultimately became the foundation for the division as it exists today: an amalgam of operations, technology support, analysis and modeling, training and consulting services.

These services are available to end users in the company on a fee basis and are governed by a board of directors made up of the highest ranking resident managers of each of the intra-Du Pont clients.

The division's early work was accomplished on an IBM plat-form, Taylor says. "The IBM 3081 had gotten scientists accustomed to doing work on computers and paying for high-end computing," he says. But the founding consultant lost its franchise as the result of two convergent developments. First, DEC learned how to build big computers and cluster them. Then, Cray Research, Inc.'s Cray-1A arrived and wiped out IBM's number-crunching advantage.

In early 1986, Taylor says, "Cray approached us with a good lease on a used Cray-1A. They wanted to create a success model in the chemical industry. Cray got what it wanted, and Du Pont got the only supercomputer in the chemical industry, according to Taylor. Currently, some 1,700 scientists run nearly 1,000 experiments a day.

Moreover, Taylor says, "the supercomputer lets you run experiments that would not only be too time consuming or expensive but too unsafe to run other-

Cray-based hazardous Continued on page 64 Inc.

Global

FROM PAGE 1

eral-purpose workstations.

But what impresses observers even more than those highlights is the integral role that information systems plays within Du Pont's management fabric.

The way they have forged the link between business management and technology management, for a corporation of their size and diversity, is truly impressive," says David G. Robinson, president of Cambridge, Mass.-based MIS consulting firm The Index Group, Inc. The Index Group helped Du Pont organize a technology training program for managers in the early

Cairns' organization encourages risk-taking but within a rigidly enforced set of guidelines anchored by just three approved systems vendors — IBM. DEC and Hewlett-Packard Co.

The risk-taking can generate exceptions that overwhelm the rules, as typified by the presence of more than 10,000 Macintosh desktop computers from alternate supplier Apple Computer,

The guidelines form the backbone of Cairns' central MIS operations in a decentralized company that boasts no less than eight billion-dollar units in businesses ranging from oil to biomedical products. Cairns controls a worldwide systems budget of more than \$750 million.

"If management wants to do something [with information technology], you better be capable of doing it," Cairns says. "That's why the infrastructure is so important. If the managers perceive that the [MIS] function is out of control, whether it is or it isn't, you cannot lead this ef-

Top of the line

Du Pont has harnessed technology as a business resource in ways that have earned the firm high marks from competitors and peers. In a recent High Technology Business magazine survey of chief executives and analysts in 10 industries, Du Pont earned the top spot among the 20 largest oil and chemical companies for its use of technol-

ogy.
"We're trying to establish with people the importance of seeing their [MIS] activity used in the business," Cairns says, "and they get a lot of kicks out of that - being not just an MVS expert, but seeing how that [expertise] is being used to be more responsive to our businesses.

Highlights of the ways that Du Pont uses MIS resources in its businesses include the follow-

• An internally developed E-mail network system, possibly the largest in the world, on which 46,000 users can communicate worldwide via IBM, DEC, HP and Apple computers (see story page 61).

· Several hundred expert systems, used in applications ranging from optimal food-carton design to crafting confidentiality documents for the legal department (see story page 61).

Continued on page 61

At A Glance

E. I. Du Pont

Sales: \$30.4 billion

Employees: 146,000

Vice-president of ormation systems: Raymond E. Cairns Jr.

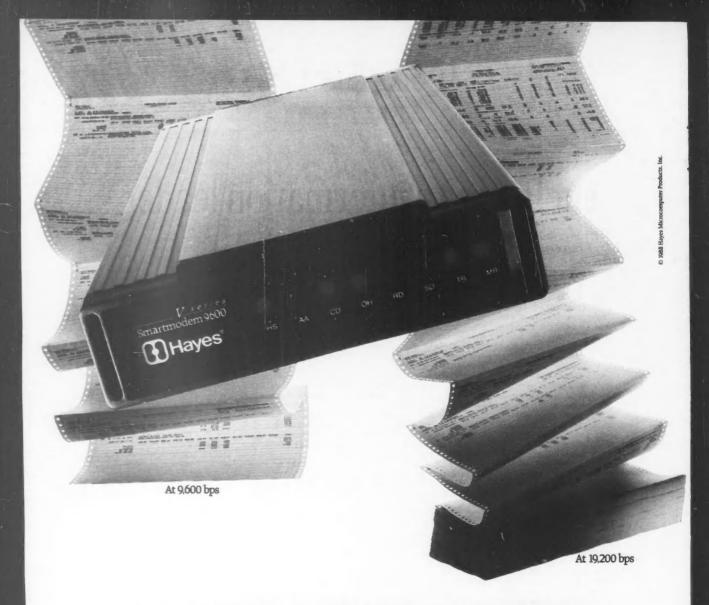
MIS budget: At least \$750 million

Key systems: 18 to 20 IBM mainframes; DEC and Hewlett-Packard minicomputers; and more than 20,000 IBM and Apple

Petroleum, plastics and fibers, biomedical, industrial and consumer

CW CHART

- Connecting 46,000 E-mail users
- Du Pont leadership in artificial intelligence
 - In the market for technical grads



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Global

FROM PAGE 59

 The chemical industry's only Cray supercomputer, which gives Du Pont researchers unprecedented power and speed for designing products such as fibers and chemicals.

 A computer-aided software engineering methodology that Du Pont is now marketing outside the company for profit [CW, Feb.

• Forty worldwide teleconferencing sites.

 By the end of this year, an alldigital network allowing 20 Du Pont sites in northern Delaware to exchange voice, data and video traffic.

As impressive as this list may be Du Pont's lea

be, Du Pont's leadership in the corporate role of MIS goes beyond leading-edge technology or even beyond marketplace advantages gained through computing.

ing.

To some observers, the greatest information technology achievement of the No. 9 company in the Fortune 500 is a psychological one.

"I view their strength not as an inventory of things they've done but their capability to mobilize their information resources very quickly against changing business conditions," the Index Group's Robinson says.

Cairns says Du Pont's culture

and structure gives the Information Services Department some hidden advantages in the crusade to integrate business strategy and technology. With up to three-quarters of Du Pont's executive committee boasting Ph.D. degrees, there is no lack of technology awareness among top managers.

The company encourages cross-fertilization between business and technology backgrounds. For example, the field

program encourages a management growth path that winds through several disciplines within the company (see story page 64).

"Three quarters of the people we send out [of MIS] never come back," Cairns says, "which I think is great."



Henry Mornegu

Cairns' 25-year Du Pont career is a classic model of what the company fosters. Hired as a researcher, Cairns cut his management teeth in manufacturing, engineering design and corporate plans before joining the information systems department nine years ago.

Steering clear

This business orientation lends a touch of irony to Du Pont's reputation in information systems. Although considered leading-edge in its use of technology, Du Pont has in most cases studiously avoided the leading edge of the technology itself. Too often, the

AI at bargain basement prices

ack in the mid-'80s, when Ed Mahler, Du Pont Co.'s artificial intelligence program director, became intrigued by expert systems, AI was regarded by the pragmatic business world as techno-siz-zle with a questionable amount of steak — and at filet mignon mrices.

"The myth was that if you didn't spend \$2 million to \$3.5 million building an expert system, you weren't going to end up with anything worthwhile," says Robert Keller, president of Harvard, Mass.-based Renaissance International Corp., an AI consulting firm that has worked with Du Pont. Mahler said, "Nonsense."

Convinced there were savings to be made for Du Pont by strategically dispersing nutsand-bolts expertise throughout the company's huge and scattered operations, Mahler's group proceeded to take the "artificial" out of artificial intelligence and the cost out of the stratosphere.

To do so, Mahler eschewed LISP machines, large-scale projects and multicredentialed specialists. He targeted mundane problems with applications-oriented software written in conventional languages and supported by IBM Personal Computers and Digital Equipment Corp. VAXs.

Today, the grass-roots approach — decentralized, integrated expert systems written by users — returns an average of 15 times Du Pont's investment, Mahler says. The de-

partment "is making tens of millions of dollars a year for this company," he says.

Mahler's group trains about 40 Du Pont employees a week in expert systems. The idea, Mahler says, is to supply them with tools they can target at problems as diverse as designing the optimal food carton and crafting confidentiality documents for the legal department.

A user support group, now about 1,000 strong, meets five times a year and otherwise communicates via an electronic network. This team, Mahler says, "is very unusual at Du Pont, but in our case it's critical. Our success hinges on the ownership of each expert system by the end users."

NELL MARGOLIS

bits-and-bytes state of the art brings with it the two things Cairns most abhors — cost and incompatibility.

"It's not that we'll go with obsolete technology, but we're going to manage that introduction of technology to take optimum value of the price/perfomance," he says. "Some years ago [in buying decisions], it was nine parts for functionality and one part for cost. Now I'd say it's five and five."

Examples of hot technology receiving a cool reception in Wil-mington include Unix and high-end graphics workstations. Neither has been written off, but both are still considered premature in terms of probable contribution to the Du Pont bottom line.

John H. Taylor, manager of Du Pont's Scientific Computing Division, recently concluded that the time was not yet ripe for implementing top-of-the-line workstations for modeling of compound chemicals. Among the major barriers, he says, are the absence of clear graphical standards and uncertainty as to who will be the ascendent vendors in the coming bit-mapped graphical workstation market.

Du Pont's philosophy vindicates skeptics who doubt the value of technology itself and zealots who champion its use as a competitive weapon. The most innovative system in the world will not help Du Pont's businesses be more competitive if it cannot talk to the systems already in place.

Alongside its top-down, centrally managed infrastructure, MIS encourages and rewards creativity at the business-unit level.

"We believe strategic uses of information within a business stand a greater chance of being implemented if they originate within that business." says Henry Morneau, director of planning and development.

Some recent examples include the medical products department's development of a PChased clinical chemistry analyzer and the fibers department's investment in additional data storage to save process-control information for research engineers to consult in the development of new products.

As the corporate information systems infrastructure grows in both size and business importance, Cairns says he sees a huge challenge for MIS.

"The infrastructure and network will have to be managed by highly sophisticated, talented people who have to be customerand cost-oriented," he says. "Just to have that is necessary ... but completely insufficient. You've got to get out there to the users and stimulate them in how it can be used — and then help them manage that." •

No need for stamps

good example of the way information technology can help a company be more efficient and competitive can be found on the deaks of 46,000 Du Pont Co. employees.

Each user is hooked into a homegrown worldwide electronic mail system from which any desktop system can send a message to any other. The E-mail network supports users of IBM's Professional Office System, Digital Equipment Corp.'s All-In-1 and Hewlett-Packard Co.'s Desk office information systems running on personal computers and workstations from IBM, DEC, HP and Apple Computer, Inc.

The design and implementation of the system illustrates the type of partnership between MIS and Du Pont's business units that the company espouses.

Several years ago, when two business units felt they required the E-mail network, the information systems department got involved. It hired third-party developers and designed the single system for corporate wide use.

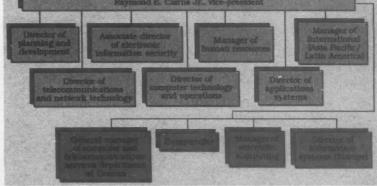
"We think it is very important to leverage something like electronic mail," says Henry Morneau, Du Pont's director of planning and development. "The more mail systems you have, the greater the cost."

Saving money is the obvious first benefit, but the more intangible benefits to Du Pont's business are even greater.

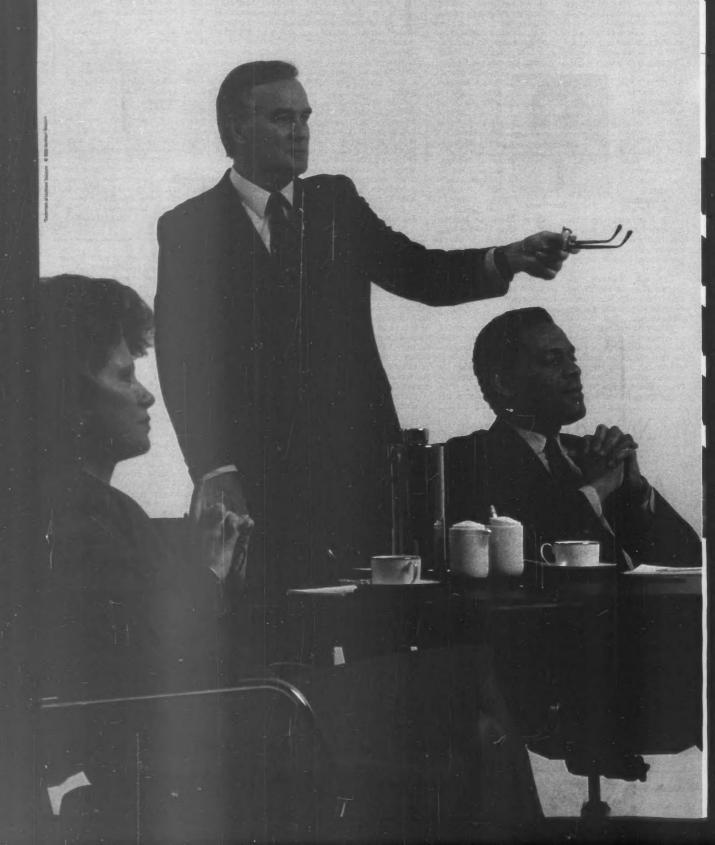
"Geography and time are barriers to competitiveness," says John H. Taylor, manager of the scientific computing division. "Worldwide telecommunications helps us overcome those barriers."

CLINTON WILDER

Information systems department reporting structure



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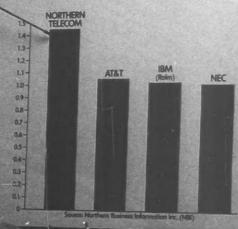
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NETWORKING

Taming of the techie

BY STEVEN M. ULFELDER

Relax, techies: Although it is back in vogue for MIS to hire liberal arts majors and teach them data processing, Du Pont Co. is committed to actually hiring more technically oriented college graduates and teaching them business skills.

"It's easier to teach a technically oriented person business skills than a business-oriented person technical skills," says Raymond E. Cairns Jr., vice-president of Du Pont's Information Services Department (ISD). Bill Carter, director of Du Pont's Computer Technology and Operations Division, agrees, but he stresses that the firm is aware of the need to expand both the ISD worker's and the group's roles.

"Anyone can be of greater value with a broader portfolio of experiences," he says. To that end, the ISD recently hired a former marketer to help the department understand end users' needs.

A Du Pont spokesman says the ISD's turnover rate stays between 6% and 7% per year. Achieving this enviable figure begins with recruitment, he points out. To attract college students, the division

offers the Field Program, which is aimed at exposing young employees to a broad

Under the program, new hires take on three two-year assignments in fields such as the ISD, telecommunications, marketing and engineering to find out which fields interest them. After the employees put in their six years, Du Pont guarantees they will be offered positions in at least two of the three fields.

"Word [about the program] gets around campuses," Carter says. "After four years, these kids are saying, 'I'm tired of studying; I want to go to work.'"

Carter says the Field Program — an idea that the ISD borrowed from Du Pont's Engineering Division in 1981 — has provided an enormous boost for cam-

pus recruiting.

Cairns says three quarters of the Field Program recruits who assay fields outside the ISD never return — and that is fine by him. He says he prefers employees who know from experience that MIS is their field of choice.

Good reputation

Employees who stick with the ISD are joining a division whose stature within Du Pont has skyrocketed in the past 10 years. Henry Morneau, Du Pont's director of planning and development, says top management's MIS consciousness was first raised through a week-long, off-site Computer Management Program tailored by a third party for Du Pont.

This educational program, which all

This educational program, which all high-level managers completed, became a turning point in the corporation's attitude toward computing. As a result, Morneau says, ISD employees face "greater demand but a lot more challenge; there's a lot more reward in the job."

To further reward MIS workers, the ISD implemented in 1986 the Vice-President's Customer Excellence Award, a quarterly prize given to systems employees for outstanding service to customers—that is, end users.

A Du Pont spokesman says the award sometimes carries a cash prize, the amount of which the company declined to make public. Through such programs, the ISD maintains its low turnover rate, despite paying no more — and perhaps less — than its competitors, Carter says. ●





STEVENM FALK/GAMMA-LIA!

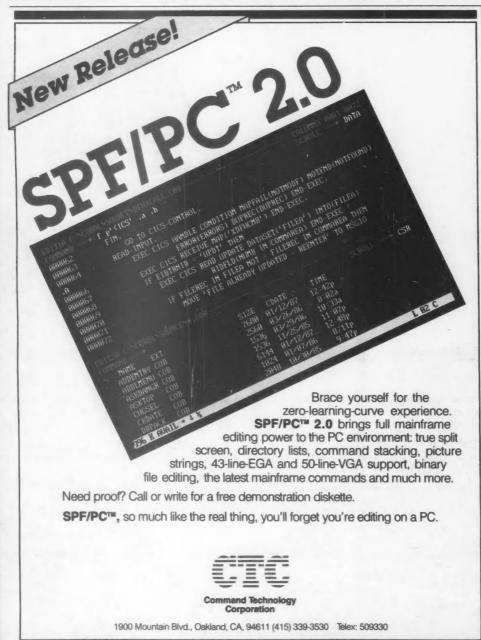
waste disposal models created at Du Pont, for instance, have become the Environmental Protection Agency's standards for granting permits.

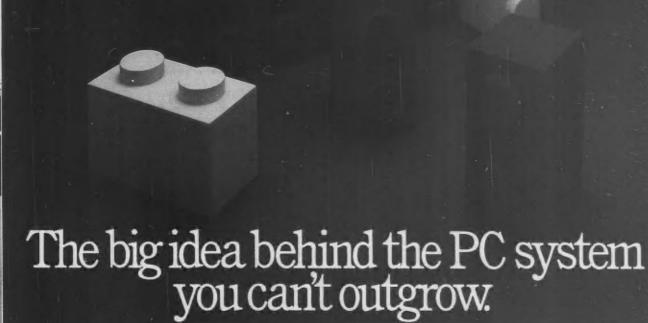
That, Taylor says, is competitive advantage. And it doesn't just make sense— it also makes dollars. The technical computing division is now making a profit—"which we rebate," Taylor says— on its supercomputing operations.

In addition to the Cray machine, scientific computing resources at Du Pont's Wilmington-based Experimental Station include a 16-node Vaxcluster, in which five VAX 8800s and five 8650s combine to kick out about 90 million instructions per second. That cluster uses multiple network links to a second Vaxcluster, the Cray-1A, numerous remote VAXs and corporate IBM mainframes.

Ironically, however, as of last month, "the 3081 is packaged for return to the leasing company; today, this division is non-Blue shop." Taylor says. "IBM put up no fight with regard to the 3081. We felt that we had worked rigorously to try to make them successful here, and they agreed."

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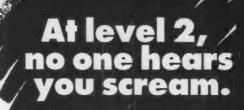
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Edgar M. Hummel

Developing development

"The users are never satisfied. All they do is complain. If I didn't lose all my time in meetings and status reporting, I could get some work done. As it is, I'm already working too much overtime, and the projects are way behind."

If your programmers sound like this and users are complaining about delays and poor quality deliverables, and if no one ever seems to know the status of their projects, don't fire the data processing personnel — it may just be that your development process needs improvement.

Most DP development problems stem from the incompleteness of the development process. Unless a person has worked as a lead technician, project manager or quality assurance analyst in a structured development environment with a good development process, the person probably has not had much of an opportunity to learn the basics of such a process.

Phase out

Any development process is separated into phases. The worst is the two-phase method in which programmers write the code in Phase 1 and implement it in Phase 2. Thankfully, this pattern seems to be an exception — most development groups attempt to produce quality products. It just seems that they run out of time to test them properly and to correct them.

Most development processes are composed of five main Continued on page 71

Making his mark

Well-traveled veteran takes giant steps

BY ALAN J. RYAN CW STAFF

CHICAGO — Charles Mallet wants his data center to be clean, and he has the artwork to prove it.

When the senior vice-president of information management at Heller Financial, Inc. complained to his employees that they were tracking dirt into the halls of the data center, they responded by presenting him with a sheet soiled with their footprints.

Now the footprints reside in a drawer in Mallet's office, but are conspicuously absent in the data center. Through his still-thick native Brooklyn accent, Mallet gets his point across.

A 30-year veteran of the data processing field, Mallet has had a career marked by his climb from computer operator to his current post. In doing so, he has crisscrossed the country and the hemisphere, with a three-year

50 PERCENT OF RESPONDENTS

PROFILE Charles Mallet



Position: Senior vice-president of information management, Heller Financial, Inc. Mission: To leverage converging information technologies to provide a competitive edge for Heller International heripage.

stint in Brazil in between. His list of his previous employers in-Continued on page 68 IMPORTING TECHNOLOGY

Living the Japanese way of MIS

BY DAVID A. LUDLUM

t's not an issue for protectionists or free market forces, but the U.S. is importing Japanese methods of information systems management, and the development could affect the way companies here run their systems.

As Japanese firms have set up subsidiaries in the U.S., they have brought with them general management principles and techniques that numerous American companies imitated as the Japanese gobbled up global market share.

At the U.S. subsidiaries, many of these elements are evident in the management of information systems. They include loyalty between employer and employee, job rotation, an emphasis on quality and devotion to productivity.

MIS managers at some of the subsidiaries say that blending Eastern approaches with traditional Western ways gives their departments an unusual hybrid style — and a competitive edge.

"The combination of the two approaches is stronger than either separately," says Robert Trenchard, vice-president of MIS at Sony Corporation of America in Park Ridge, N.J. He characterizes the Japanese approach as efficient and the American style as more aggressive but lacking control over costs.

But don't expect an easily implemented method for applying Japanese management to information systems. Japanese culture often confronts the Western observer with a raft of contradictions, and Japanese management principles can tug MIS in different directions.

Furthermore, Japanese companies, like American ones, vary in their cultures and management styles. Some



DAVID FLAHERTY

take a highly centralized approach to information management, for example, while others are decentralized. And while companies in Japan tend to rely heavily on contract labor and internally developed software, their U.S. subsidiaries differ in the extent to which they have maintained these tendencies.

Teamwork

A fundamental theme running through Japanese approaches to information management is the notion of the company as a team or family. The concept is rooted in a mutual respect between employer and employee, according to Trenchard.

Continued on page 72

Strongly Agree Undecided/ Disa

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Distribution

Manufacturing

Data View

Information systems reduce corporate

resource needs

Most chief executives and MIS managers in the distribution and manufacturing industries agree

Goldman Sachs to open Brooklyn center

BY ALAN ALPER

NEW YORK — After mulling a move for two years, Goldman, Sachs & Co. has decided to keep its data processing operations here by opening a second corporate data center in Brooklyn early next year.

The decision, however, re-

The decision, however, reflects a trend within the financial services industry of moving DP operations away from the heart of Wall Street to the outer boroughs and suburbs, where operating costs are lower [CW, Sept. 28, 1087]

The investment banking house said it had run out of room at its current location in the financial district and needed a second data center for contingency planning reasons. "Our growth required more raised floor space," noted Rick Adam, partner in charge of the firm's Information Systems Division. "We'll

now have a two-data-center configuration — each center mutually backing up the other — which will solve our capacity, disaster recovery and assurance problems."

Goldman intends to tie the two data centers together with either multiple T1 lines or a T3 line. The firm expects to make use of fiber-optic links provided by one of two common carriers. "We also have a clean microwave shot across the East River

for backup, if need be," Adam explained.

The Brooklyn data center, a 100,000-sq-ft facility, will go online in a staged manner, Adam said. The firm said it expects to have an IBM 3090-class machine up and running by next March. A second 3090 and affiliated direct-access storage devices, a network control center and backup Digital Equipment Corp. and Wang Laboratories, Inc. minicomputers will be added as the year progresses, he noted.

The data center will employ 200 operations and technical

support personnel. Some new jobs will be created, Adam said, but most of the positions will be filled by existing employees.

The data center will be located at One Pierrepont Plaza, the same new office building where Morgan Stanley Group, Inc. recently relocated its data center.

Adam said the firm chose Brooklyn because it wanted to stay in New York. "Most of the employees come from that direction [east of Manhattan]," he said. "Besides, it's only one subway stop away from our head-quarters."

Making mark

FROM PAGE 67

cludes Southern California Gas Co., Western Development Laboratories, General Electric Co.'s Plastics Division and General Electric Credit Coro.

Heller Financial is a company that recognizes the importance of information services, Mallet says, and has made his position one of the highest in the company. Mallet reports directly to the chairman and chief executive officer. He is also on the board of directors of Heller International, a wholly owned subsidiary of The Fuji Bank Ltd. Fuji is Japan's most profitable bank and the third largest bank in the world in terms of assets and deposits.

Live and learn

Mallet, 51, admits that throughout his MIS career, he has "probably made every mistake known to man, but hopefully not twice." He has learned that one way to avoid mistakes is to listen, and has such high regard for the opinions of end users within the company that he insists they are included in all development efforts.

"One of the things Chuck demands of our projects is that there is a full-fledged involvement of the user community in the development of systems," says Chip Kyle, vice-president of commercial financial services support. "He'll refuse to engage in development unless there is user input."

For his workers, Mallet provides a comfortable attain sphere; one in which they say they can flourish, learn and have fur working for a down-to-earth hoss.

Dianna Bourks, vice-president of information systems support and administrative systems, says recent performance reviews with her staff turned up positive comments about the company's atmosphere. "Chuck creates an environment that pushes people beyond where they thought they could perform," Bourke says.

"We have a lot of thoroughbreds here, and in that kind of an environment, it's sometimes hard to keep a sense of teamwork." she adds. "But we work very hard and enjoy each other's company."

Derring do

Part of that hard work stems from Mallet's risk-taking personality.

"Chuck has allowed me to go to plug-compatible vendors where they made sense, were cost effective and were reliable," says Dennis Wenk, vice-president of information processing. Heller is basically an Amdahl Corp. shop now, Mallet says.

Wenk adds that while some managers are wary of risks, "We have a very successful risk taker here."

Bourke agrees. "You don't go to Chuck with an idea unless you already have it worked out, and know how much it will cost to implement, because he is liable to say yes or no on the spot," she says. "The people who work around here have to be risk takers as well."

One of Mallet's major accom-

plishments at Heller was the company's migration to IBM technology in just 13 months. Previously, Heller was mainly a Burroughs Corp. shop, with some Digital Equipment Corp. and Wang Laboratories, Inc. minicomputers. Now, with the Amdahl computers, the company is running Cullinet Software, Inc.'s IDMS/R relational data base management system and

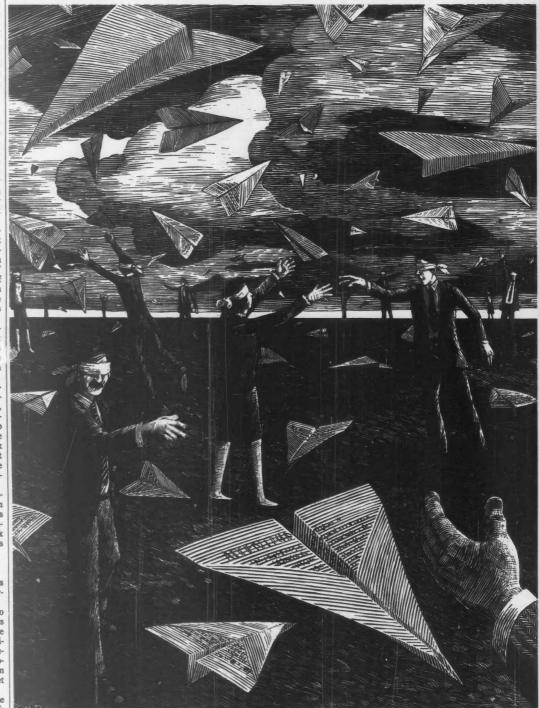
Cullinet's ADS/Online and ADS/Batch fourth-generation languages. Also in use is IBM's MVS/XA.

There are 550 IBM Personal Computers and compatibles and approximately 1,000 terminals throughout the company. Mallet says Heller boasts a 1-to-1 workstation-to-employee ratio; his budget this year is \$15.7 million.

"We went from a three-de-

cades-old approach to systems in a lot of areas and turned the organization completely around to where we feel that we're very well positioned in using current technology," Mallet says. What helps, he adds, is that the company's chief executive officer, Norman Blake, is very much into the technology.

Also of note is Mallet's work on the design of the company's



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data center. "Every time we brought a new piece of equipment into our old building, we had to reinforce the floor," he says. The expense and time consumption were unacceptable.

When Heller moved to its current location, Mallet located the data center in the building's basement to avoid the need for floor reinforcement whenever equipment was added. Flooding, however, was a concern — Heller is located near the Chicago River. But when the river spilled its banks last year, leaving many MIS managers with horror stories to tell, the Heller building remained watertight. The data center is equipped with water sensing devices and pumps, however, just in case.

Mallet is protective of the data center, thus his complaint

about the footprints. In designing it, he and his team tried to eliminate all the annoyances of the old center. "We did little things like environmentally isolating the print room from the rest of the data center."

The center's mainframe room is called the quiet room, because there is seldom anyone in it. Workers have their terminals in the central service room.

in which the bulk of the operations take place.

Mallet spends a great deal of time supporting and encouraging his workers. "I've got a sign in my conference room that says 'Attitude, not aptitude, determines altitude,' "Mallet says, as an example of how an employee can climb in the organization. "If you don't like coming to work, there's a problem."

Outside of Heller, Mallet reduces the number of risks he takes by staying involved with his community.

Outside interests

Although his typical workday begins when he leaves his house at 6 a.m. and ends when he arrives home at 7 or 8 p.m., Mallet makes time for some of his other skills. He is on the advisory board of the University of Illinois in Chicago, and he and his wife are active in charity work for two homes for emotionally disturbed children.

In his office overlooking Chicago's North LaSalle Street financial district, the walls are alive with enlargements of Mallet's photographs of flowers, one of his many hobbies.

An avid golfer and former marathon runner, Mallet also lists theater as a favorite pastime. He and his wife spent their vacation last fall in London attending plays, and they also keep tabs on the Chicago theater scene as well.

Traveling is another of Mallet's passions. He has traveled extensively in South America and Europe and has been to the Orient and Australia. He will add Italy to his itinerary this fall.

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Avignon 88, Workshop on Export Systems. Avignon, France, May 30-June 3 — Contact: Jean-Claude Rault, workshop chairman, EC2, 269-287, rue de la Garenne, 92000 Nanterre, France.

Independent Computer Consultants
Association National Conference.
Cleveland, June 1-3 — Contact: The ICCA,
933 Gardenview Office Pkwy., St. Louis, Mo.
63141

International Trade and Computerization Conference and Exhibition. New York, N.Y., June 1-3 — Contact: The National Council on International Trade Documentation, Suite 205, 350 Broadway, New York, N.Y. 10013.

Macworld Technology and Issues Conference. San Francisco, June 1-3 — Contert: PCW Communications, Inc., 501 Second St., San Francisco, Calif., 94107.

QNX '88, International QNX Users Group Meeting. Ottawa, June 1-3 — Contact: Susan Tippett, Quantum Software Systems Ltd., 175 Terrence Matthews Crescent, Kanata, Ont., Canada K2M 1W8.

Corporate Venturing Conference '88. Boston, June 2-3 — Contact: Lindsay Jones, Venture Economics, Inc., P.O. Box 81348, Wellesley Hills, Mass. 02181.

American Bar Association Seminar on Information Systems Contracting. Washington, D.C., June 3. Contact: James D. Gibbs, Suite 900, 1050 Connecticut Ave. NW, Washington, D.C. 20036.

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Business Centers



CONTINUED FROM PAGE 67

phases: user requirement gathering, design, code, test and implementation. Often, each of these phases is subdivided. For example, the design phase can in many cases be split into high- and lowlevel design phases.

Different companies may use similar development processes, yet one seems to achieve much higher quality and productivity because it understands the basics of a good development process.

Back to basics

The basics are simple. The number and granularity of the phases should be based on the most complex product that will be created by the development process. If a particular product is not complex, then a conscious decision can be made to combine — rather than eliminate — certain

For example, if the development process has three design phases, such as high-, medium- and low-level design, a decision may be made on a simple development effort to combine the mediumand low-level design.

Each phase is then detail-defined as to entrance criteria, or what is needed before starting; the scope of activities, what is to be done in this phase; and exit criteria, how to know when the phase is complete and how to show it.

Each phase should be a natural progression of the previous one, and therefore, they must be integrated. The entrance criteria for one phase should specify that the previous one's exit criteria must be met. Such specification, along with a quality review between phases, ensures the necessary integration.

To improve the process, postmortems should be done at project completion. Metrics and logs must be kept to better predict future schedules and resource requirements.

Draft a test team

User representatives should be part of the test team. They should also be included in each quality review. The test team should be an independent test tool, a knowledgeable group that has been developing the test plan and test cases while the developers have been designing and coding.

Test-plan and test-case development are phases as well and are also subject to the entrance and exit criteria, defined scope of activities and quality reviews.

A definition of the development process that includes the above components must be written, reviewed, approved. distributed and designated as a require-

Most importantly, nace there is a defined process that works in the environment, the staff must be trained and provisions made for periodic review and training of new personnel.

Hummel is a consultant at Computer Assistance, Inc. He has more than 20 years of experience in data

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Japanese

CONTINUED FROM PAGE 67

Robert Schwartz, director of systems and programming at Sony, says, "There is a genuine concern in terms of how employees are treated and the things companies are willing to do for employees."

One manifestation of the notion of the company as a team or family at the parent companies in Japan is a traditional - but fading - commitment to providing workers with lifelong employment. One of the benefits the companies reap from this commitment is a loyalty on the part of workers that results in low turnover, a situation that stands in sharp contrast to DP at U.S. firms.

American subsidiaries have not adopted the commitment of lifelong employment, but some of them reflect the principles of loyalty and teamwork and stress the value of long-term employment. "You have that kind of flavor," says Schwartz, who claims his department's turnover rate was 5% last year and has been zero this year.

Several MIS managers say such low turnover, among both staff members and users, is a boon to the development of systems. The "corporate memory" of longterm employees has been undervalued by American management, Trenchard says.

Robert A. Best, vice-president of planning, systems and business development at Toyota Motor Sales U.S.A. in Torrance, Calif., says low turnover saves on training expenses. "Because we have virtually no turnover, we are probably able to design systems reasonably more efficiently than an American company with high turnover," he says; Best claims a 2% annual rate for his DP department.

The Japanese practice of rotating workers among functions also lends an advantage in systems development, managers say. The practice has been only par-tially transplanted to the U.S.

In MIS departments in Japan, "a manager must have broad experience in business rather than technical knowledge. says Yoji Izumi, manager of EDP Systems at Bank of Tokyo Trust Co. in New York. MIS managers there play a relatively active role in designing systems rather than relying on users, he adds.

Sony's Trenchard says the two staff members he has hired from Japan have held positions similar to those of the users they work with. He is beginning a job rotation program at the U.S. subsidiary, at which, he says, there is an attitude that "if the company makes an investment in the employees, they'll make an investment in the company.'

Quality and productivity

In systems development, the emphasis on quality characteristic of Japanese management can work at cross purposes with the drive for productivity, resulting in different strategies regarding the pace of development.

"Our philosophy is to test it enough to make sure it's going to work when you go live — taking your time and doing it right," Toyota's Best says. "We avoid the more entrepreneurial style of trying to put it in fast. We get a very good consensus from users before we go live. The users are willing to wait until it's certified."

The approach is different at Bank of Tokyo, where the strategy is to plan carefully, then execute aggressively. "We think time is more than money," Izumi says. "We are always in a hurry and implement a system more quickly than Americans, although we know we might have some small bugs.

Last year, the bank completed an operating system conversion — from IBM's DOS/VSE to its MVS — in six months, half the time IBM officials had expected, Izumi says. "Usually, our schedule is very aggressive compared to some Americans'. Once we set a schedule, we try our best to meet it."

An IBM official, who asked that his name not be used, said "it was indeed a surprise" how quickly the bank completed the conversion. "To a large extent, it was the Japanese cultural commitment to carefully laying out a plan or strategy and overcoming anything that gets in the way," he said. "When you get right down to it, it's the work ethic."

Equipment
The emphasis on productivity also leads some Japanese companies to impose relatively stringent requirements for utilizing hardware capacity. "We have to work a little harder to justify equipment, says. "They make sure you're utilizing everything you have fully."

At the same time, the tradition of longterm employment can provide a stimulus to spending for systems. Japanese firms often view such investments as a means of avoiding the need for more employees.

"They very much advocate computerization. We are the largest department here at Toyota U.S.A," Best says. "A lot of that is from the traditional cultural desire of Japanese companies to hold down head count."

The proclivities for efficiency and quality among Japanese companies also influence the type of hardware and software some of the U.S. subsidiaries buy.

"When they look at software, they're looking not only at functionality, but at efficiency too," Sony's Schwartz notes.

And in keeping with its concern for quality, Toyota U.S.A. is more apt than many American companies to turn to proven equipment, Best says. "We might be a little bit more conservative in the acquisition of technology. We try to be close to the front, but try not to be point man."

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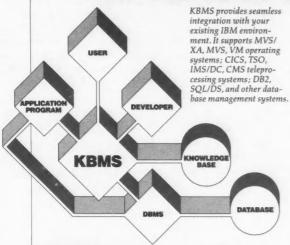
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INDUSTRY

Clinton Wilder

Another fine mess



"The U.S. government has driven a wedge between domestic chip makers and chip users that may prove

very hard to remove."
"Panic grips chip buyers," CW, Oct. 6, 1986

DRAMs, DRAMs, who's got DRAMs? Not Hewlett-Packard and Apple, which have delayed new products because of the current memory shortage. Not Dell Computer, which won't price its IBM Personal System/2 clone until it has a better idea of memory prices. Sun Microsystems has 'em, but it will make you pay \$250 extra for its add-on memory products because of their inflated cost.

What got us into this mess? Well, a lot of things, not the least of which is the consistently robust health of U.S. corporate demand for microcomputers. Other factors have to do with innocuous issues like production cycles, fabrication capacity ramp-up times and semicon-

Continued on page 79

Excelan-NET merger imperiled

BY PATRICIA KEEFE

A dispute over the value of Excelan, Inc. stock is credited by industry sources with seriously jeopardizing the proposed merger between Network Equipment Technologies, Inc. (NET) and Excelan.

Excelan shareholders, with the numbers necessary to block the merger, feel they are being shortchanged and have protested vigorously to Excelan's board, sources said. If a vote were held today, the deal would be killed, said Mary McCaffrey, a vice-president at C. J. Lawrence, Inc.

Last week, NET and Excelan officials denied the deal was off, but few observers believe the duo can move beyond their current standoff to patch their differences. It boils down to NET's unwillingness to pay more for Excelan, according to Richard Kimball, an analyst at Montgomery Securities, Inc.

"As of [May 13], the deal was dead," a source close to NET

said, adding he would not be surprised if the quarrel wound up in court. A source close to Excelan suggested the deal had been rocky from the start.

A flurry of terse releases flew back and forth last week, as NET first charged Excelan with breach of contract, threatened to exercise its stock option and then complained that Excelan's response contained an inaccurate statement — specifically that NET declined to go forward with the merger.

"That's not true," said Pame-

la Federman, NET's general counsel. She added NET has given Excelan a list of contract breaches. "We asked them to promptly and completely cure the breaches as that we may continue" with the merger, she said.

Neither Excelan nor NET will detail the alleged breaches.

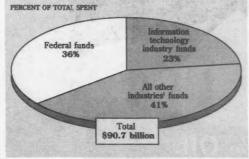
Analysts have suggested that two vendors that really want to merge would work together to surmount any obstacles. Not only do they wee little evidence of that happening, but the threat of litigation is seen as the real death knell for the Excelan-NET marriage.

'I can't imagine the two com-Continued on page 76

Data View

A big piece of the R&D pie

Information technology firms spent \$20.7 billion on research and development last year to account for almost one-fourth of the 1987 U.S. total



INFORMATION PROVIDED BY THE COMPUTER AND BUSINESS EQUIPMENT MANUFACTURERS ASSOCIATION CW CHART

Profit barrier cracked

Computer Associates tops \$100M software mark

BY JAMES DALY

Computer Associates International, Inc. became the first software company to chalk up \$100 million in yearly profits in financial results announced last week.

While Computer Associates' doubling of annual earnings daz-zled the financial world, other vendors, including Ashton-Tate Corp. and Hewlett-Packard Co., posted solid quarterly gains. Wyse Technology, Autodesk, Inc. and Continental Information Systems Corp. (CIS) also showed impressive results for the quarter ended April 30.

Although analysts expect Mi-

crosoft Corp. to become the second member of software's \$100 million profit club when its fiscal year ends this summer, Computer Associates coupled expansion in domestic and foreign markets with strong results from its August 1987 purchase of Uccel Corp. to become the first such firm to reach the milestone.

While the company has drawn Continued on page 81

Inside

 HP, Northern Telecom promote open nets. Page 76.
 Hard times for third-party maintenance firms. Page 80.

Ailing Symbolics lays off 225

BY JAMES DALY

CAMBRIDGE, Mass. — Symbolics, Inc. sliced deeply into its ranks last week, announcing that it would eliminate 225 jobs at all levels, or more than one-third of its work force.

A spokesman for the troubled artificial intelligence workstation maker said the cutiack to 415 employees was necessitated by the company's current downsizing plan and would save the firm an estimated \$15 million per year.

"We simply needed a more streamlined company," said Francis J. Fenney Jr., the assistant general counsel for Symbolics. "This allows us to fund operations with internal cash flow through the next several quarters and will assist us in obtaining the financing we will need for our longer term goals. We certainly hope this is the last action

we need to take."

Company cofounder Howard I. Cannon added that funds saved with the cutbacks will be thrown behind the continued development of a new line of Symbolics products, which will be based on the so-called Ivory chip, a microprocessor containing all of the Common LISP language.

The company will also concentrate on selling Sony Microsystems Co. workstations through a recently signed three-year OEM agreement.

Up until about two years ago, when the firm stumbled after the AI workstation market became saturated, Symbolics was one of the high-flying companies in the AI workstation market.

Under the direction of Chairman and cofounder Russell Noftsker, Symbolics quick's cleared the \$100 million revenue level with a line of dedicated LISP workstations for AI software development.

Akers lambastes U.S. pols for lack of trade leadership

BY MITCH BETTS
CW STAFF

WASHINGTON, D.C. — IBM Chairman John F. Akers, in a private speech to Washington economists on May 11, lashed out at U.S. politicians for engaging in "trivial pursuits" while failing to take the steps necessary to make U.S. businesses more competitive in world markets.

He faulted the Congress, the executive branch and the presidential candidates for their "in-efficiency" in addressing such critical issues as improving productivity, education, tax and trade policies.

Akers compared Japan's successful economic strategy with Congress's on-again, off-again support for the research and development tax credit and the three-year delay in producing a



IBM's Akers

trade policy bill, which is now jeopardized by a presidential veto over the plant-closing issue [CW, May 9].

"Not exactly a convincing demonstration that we support innovation," Akers said.

While political candidates are spending roughly \$1 billion to

get elected this year, the campaigns have digressed into debates over subjects like adultery, plagiarism and star-gazing, Akers complained. "Let's get out of trivial pursuits and into key questions of national competitiveness and survival," he urged.

Decline and fall?

The critique was delivered at a dinner meeting of the Washington Economic Club that was not open to the press. A copy of the speech, titled "Is the U.S. in Decline?," was provided to the press by IBM.

Akers said the only way the U.S. can raise its standard of living is by boosting productivity, or output per hour of work. Part of the solution, he said, is to invest in new tools of production at the same rate as are Taiwan and Japan — those countries each invest 16% of their gross national product — rather than at the 10% level of the U.S.

The IBM chairman suggested Continued on page 81

HP, Northern Telecom promote open nets

BY PATRICIA KEEFE

NEW YORK — Hewlett-Packard Co. and Northern Telecom, Inc. recently launched a joint venture designed to address the demand for integrated enterprisewide networking.

Initially, the duo will focus on 13 large accounts thought capable of generating \$1 billion in incremental sales during a five-year period, according to Michael Kennedy, a vice-president at the Gartner Group, Inc. in Stamford, Com.

Based in Santa Clara, Calif.,

the new venture, called Corporate Networks Operation, will be equally funded and staffed and will supplement marketing and distribution activities at the two companies.

Although analysts credited HP and Northern Telecom as quick to capitalize on a growing user concern, they are not the first out of the chute. IBM and AT&T reportedly provide similar services through internal organizations.

The agreement also continues the current trend of partnerships between major systems manufacturers and communications providers, whether by acquisition or joint venture.

Others include Data General

Corp. with Nippon Telephone and Telegraph and Unisys Corp. with Timeplex, Inc.

The nonexclusive HP-Northern Telecom alliance will assist selected customers seeking to combine voice/data technology from HP, Northern Telecom and third parties. It is intended to function as a single source for the analysis, design, implementation and support of standards-based integrated corporate networks.

As of now, it is unclear how that "openness" extends beyond compatibility between HP and Northern Telecom equipment, analysts said. "There's nothing 'open' about a Northern Telecom PBK," the Gartner Group's Kennedy added.

Excelan

FROM PAGE 75

panies would want to merge after one accused the other of breach of contract — that's human nature," said Brad Baldwin, a senior analyst at Dataquest, Inc. in San Jose, Calif. "This whole issue has surfaced like some kind of loophole to provide an out."

The buy-out was announced barely five weeks ago [CW, April 18], the same day the Dow Jones industrial average dropped 100 points and former Excelan President C. Richard Moore resigned.

Thought it would work

Despite such inauspicious beginnings, the proposal was widely hailed as a perfect fit for NET, a supplier of T1 and wide-area network products based in Redwood City, Calif., and San Josebased Excelan, a maker of Ethernet and Transmission Control Protocol/Internet Protocolbased networks.

Under the purchase agreement, each share of Excelan common stock was to be traded for two-thirds of a share of NET common stock. The merger was to be completed in June, when Excelan would become a wholly owned subsidiary of NET.

After the close of business Friday, May 13, NET issued its release charging Excelan with breach of its obligations.

NET had advised Excelan that it had "the right to exercise its option to purchase up to 21% of Excelan stock at \$12 per common share as a result of Excelan's conduct in connection with the proposed merger."

Excelan fired off a response the following Monday, denying any breach of agreement. The network vendor detailed a scenario under which it acted as a go-between for disgruntled Excelan shareholders and NET.

NET has offered to raise the minimum price it will pay for each share of Excelan common stock from \$12 to \$14, Federman said.



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An IDG Communications Publication

Wilder

FROM PAGE 75

ductor product vields.

Even an earthquake near Mobara, Japan, which caused a three-week shutdown of a Hitachi chi chip plant reduced the dynamic random-access memory (DRAM) supply by 500,000 units, according to one analyst.

In other words, it's hard to assess blame for the cause of the DRAM shortage. But it is appropriate to accuse one factor that has certainly not helped the current situation — the "historic" U.S.-Japan semiconductor agreement of 1986.

Business vs. politics

The sticky situation in which computer makers and their customers now find themselves should serve as a case study for why business decisions should never be made for political reasons.

If one looked at the 1986 U.S.-Japan pact in a business vacuum, it made sense. The Japanese chip vendors, rightfully accused of selling memory chips below cost in the U.S., were required to firm up their prices and open their own markets.

But the agreement, lobbied for, conceived and signed in a time of semiconductor overcapacity, slackening demand and plummeting prices, looked backward to punish sins already committed.

Nearly two years later, that agreement is just one more factor aggravating an expensive and frustrating situation for systems vendors and buyers. Memory chip prices, raised artificially by the agreement, are now skyrocketing for the very real reason that demand exceeds supply.

It's one thing to lock the barn door after the horses have gone, but the U.S. government has made it even harder for the U.S. computer industry to clean up the barn floor.

The government may have achieved redress for one segment of U.S. industry, but at what cost to the Compaqs, Apples, HPs and small entrepreneurial companies in the U.S.? In what possible way did the 1986 chip agreement help the U.S. become more competitive?

The U.S. computer industry has become far too complicated, and far too global, for any overall good to come out of stopgap, punitive trade actions. If the government would look to the future — and its support of Sematech is not a bad example — instead of the past, and consider the big picture instead of just a piece of it, computer vendors and their customers would be a lot better off.

Wilder is Computerworld's senior editor, computer industry.

CCA cuts staff, preps for employee buy-out

CAMBRIDGE, Mass. — Computer Corporation of America (CCA), slimning down before completing its transfer to employee ownership, announced an 11% work force reduction last week affecting 45 employees.

The mainframe data base management software develop-

er cut 15 field sales representatives and 30 corporate headquarters jobs in finance, administration and marketing. No product development or customer support positions were eliminated, and a spokeswoman said CCA is still hiring in those areas. The cuts reduced CCA's worldwide employment to 350.

CCA is currently negotiating terms of a leveraged buy-out agreement for CCA management to buy the firm from its Canadian parent, Crowntek, Inc. The spokeswoman said it is more important for CCA to reduce its

cost structure to achieve profitability as a soon-to-be independent company.

CCA is also reorganizing its sales and marketing management responsibilities to take advantage of the work force reductions, but the firm declined to provide details.

The buy-out agreement is expected to be finalized sometime next month.

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IBM price cuts, competition hit third-party maintainers

BY CLINTON WILDER

Unprecedented competition in the marhetplace and IBM's price cutting have combined to take their toll on third-party computer maintenance vendors. Two key players, Dataserv Computer Maintenance, Inc. and Technical Support Services, Inc. (TSSI), were recently forced to lay off workers as a cost-cutting measure.

Hopkins, Minn.-based Dataserv quiet-

ly trimmed 66 employees, or 5% of its work force, last month, a company spokesman confirmed last week. It was the first layoff in seven years at Dataserv, a successful computer service, refurbishment and leasing firm that was acquired by Bell South Corp. in 1986 for \$96.5 million.

The spokesman said the reductions affected both corporate office and field personnel.

TSSI, a servicer of primarily IBM ter-

minals and automated teller machines, reduced its staff by 60 employees earlier this year. The cuts affected 48 of 280 full-time staff members and 12 part-time employees. Thomas McLaughlin, president of the Ossining, N.Y.-based firm, said that falling maintenance prices hurt TSSI's profit margins and forced it to streamline operations.

McLaughlin also acknowledged that the firm has lost some business to IBM.

IBM's Corporate Services Amendment price cuts last summer, which have succeeded in squeezing margins for thirdparty maintenance firms, have affected IBM's bottom line as well.

IBM's U.S. revenue from maintenance dropped 8% in 1987, from \$4.02 billion to \$3.69 billion.



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INDUSTRY WEEK

Tandem Computers, Inc. has hooked up with Motorola, Inc. to market Tandem Nonstop computer systems as part of Motorola's data communications systems. Under the agreement, Motorola's communications unit will market the Resource Management System, an automated dispatch system that uses the Nonstop as its backbone.

IBM trumpeted the technical achievements of 56 of its employees last week by doling out \$1.55 emillion in \$10,000 to \$80,000 corporate awards and naming three employees as IBM Fellows. The Fellows and their development areas are Bernard R. Aken Jr., operating system software; Michael Hatzakis, semiconductor fabrication; and James L. Walsh, high-performance switching.

mance switching.

The technical developments recognized at ceremonies in San Francisco included the Micro Channel architecture for the Personal System/2, submicron integrated circuit densities and token-ring computer network design.

Symantec Corp. President and Chief Executive Officer Gordon Eubanks said the Cupertino, Califichased software developer plans to go public early next month and has filed a registration statement relating to an underwritten offering of its common stock with the Securities and Exchange Commission.

High-powered graphics workstation maker Stellar Computer, Inc. announced its third multimillion dollar Japanese distribution pact in the past two months with the unveiling of a major OEM contract with Argo Graphics, Inc. in Tokyo. Under the agreement, Argo will package the Stellar Graphics Supercomputer with Argo's Clinks software, as well as with various I/O devices and third-party application packages, for resale.

Separately, Newton, Mass.based Stellar announced it has raised \$18 million in its third round of venture capital financing. The round included \$10 million from first-time investors, including Morgan Capital Corp. and New York Life Insurance Co.

Bachman Information Systems, Inc. has elected Charlie Bachman, the company's founder, as chairman of the board of the Cambridge, Mass., maintenance software manufacturer. Bachman's post as president and CEO will be filled by Arnold Kraft, the current executive vice-president and chief operating officer.

Control Data Corp. will stoke up the fires in its manufacture of thinfilm rigid disk recording heads when it opens a 100,000-q-ft assembly and test plant off the west coast of Malaysia in September.

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Barrier

FROM PAGE 75

industry criticism for its rapid series of company buy-outs in the past few years, some analysts see a much more symbiotic relationship in Computer Associates' proclivity to spend bucks for bytes.

"Computer Associates is not simply a mergers-and-acquisitons machine," said David Bayer, an analyst at Montgomery Securities, Inc. in San Francisco. "They are a very well-run com-

pany with a lot of depth in their

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"The assimilation of new companies exposes their products to a whole new customer base and helps the companies that are bought. Computer Associates is a strong firm; their basic growth is still in the 40% to 50% range."

For the quarter ended March 31, Computer Associates posted revenue of \$206.4 million, a 41% increase over revenue of \$146.1 million for the same period last year. Net income was \$33.8 million, or 41 cents a share, a 94% growth over the \$17.4 million, or 22 cents per

share, posted for the same period in 1987.

Yearly revenue logged in at \$709.1 million, a 57% increase over the \$452.3 million recorded last year. Net income hit \$101.8 million, or \$1.25 per share, a 103% increase over the \$50.2 million, or 64 cents a share, garnered in 1987.

Other companies reporting financial results last week included the following:

Ashton-Tate. A flood of product announcements helped the micro data base software maker maintain a steady increase in net income and revenue for the quarter. Quarterly revenue for the Torrance, Calif., firm was \$72.4 million, a 20% increase over the \$60.2 million reported for the first quarter last year. Net income was \$11.1 million, or 43 cents a share, a 22% increase.

HP. The Palo Alto, Calif., firm reported revenue of \$2.49 billion, a 24% increase over the \$2.01 billion reported for the same quarter last year. Net income was \$202 million, or 82 cents a share, a 25% increase over \$162 million, or 63 cents per share, reported for the same quarter a year earlier.

Wyse. Quarterly revenue for the San Jose, Calif., maker of microcomputers and terminals reached \$141.7 million, a 74% increase over the \$81.3 million registered in the same period a year earlier. Net income logged in at \$7.7 million, or 49 cents a share, a 48% increase over the \$5.2 million, or 37 cents per share, recorded for the same period last year.

Yearly revenue was \$456.6 million, an increase of 68% over the \$272.3 million in 1987. Net income came in at \$28 million, or \$1.80 per share, a 51% increase over the prior year.

over the prior year.

Autodesk. The computeraided design software vendor announced that revenue for its first
quarter was \$25.8 million, a
49% increase over the \$17.3
million reported for the same

that time is running out for the

U.S., which he pointed out is already in its 19th consecutive

year of budget deficits, 13th con-

secutive year of trade deficits and fourth consecutive year as a

"With every tick of that clock, every one of us should become increasingly apprehensive about the future of this country,"

Characterizing the upcoming presidential election as one of

the most critical in the nation's

history, Akers urged political leaders to make some real pro-

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FROM PAGE 75

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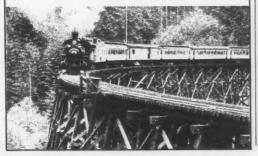
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income of \$7.2 million, or 30 cents per share, an 85% increase over the year earlier.

CIS. The Syracuse, N.Y.based computer and equipment leasing company credited the acquisition of three companies — CMI Corp., Aviron Computer Technologies, Inc. and Com-Pro

quarter a year earlier. The Sau-

salito, Calif., firm recorded net

- for its healthy revenue gains.

For the fiscal year ended Feb. 29, CIS broke the \$500 million revenue mark with \$547.5 milion, an 82% increase over the \$300.5 million reported for a year earlier. Net earnings were \$16.1 million, or \$1.05 a share, a 19% increase over the \$13 million, or 87 cents a share, reported for 1987.

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COMPUTER CAREERS

Moving up to management

Promotion from within requires technical expertise, interpersonal skills

BY SALLY CUSACK



systems professionals aspiring to management, project leadership is

the likely place to start building a career. Most MIS managers view the role of project leader as a proving ground for future managerial tal-

The responsibilities of project leaders may include defining system requirements, designing systems, programming, testing, implementing and user training.

Salaries for the position typically range from about \$35,000 to \$55,000 depending on the size of the organization.

Most new project leaders are promoted from within an organization - four out of five follow this route, according to Robert Tannura at Wood/Sprau/Tannura. Inc., an executive search and MIS consulting firm in Chicago.

'Companies would much rather promote on the first level to maintain morale," says Larry Grannis, senior consultant at Computer Staffing Consultants in Fountain Valley, Calif. "An astute manager looks for someone familiar with the project at hand, who can pitch in and help in a

panic situation. Usually the project leader position goes to someone in the existing group who is actively giving suggestions and answering questions.

Hiring outside help

When a company hires a project leader from the outside, it is usually because expansion has created a new area where there is no in-house expertise, or to staff a short-term, time sensitive project. Dominion Bank Shares Corp. in Roanoke, Va., for example, currently uses temporary outside project leaders for the immense and critical task of replacing its loan system.

At Atlas Powder Co. in Dallas, the ability to communicate, particularly with users, is an important criteria in the promotion or hiring of project leaders, says Darwin Wolfe, director of information services. Department managers assess an applicant's technical ability while Wolfe himself judges communications

Wolfe credits his project leaders with enhancing his organization's relations with users. "These people, when brought in as project leaders, turned around the attitude of our users," he says, "When I came to work here, MIS had no support from the user community. No positive

relationship existed. Through

continual, positive, direct interaction with the project leaders, this changed. MIS is now looked upon as a user service center responding to the user needs.

Wolfe, who says he promotes from within whenever possible, notes that two of the five project project leader.

Along with the interpersonal skills, he looks for an understanding of project management, critical path concepts and project life cycle methodologies and abilities at planning, organizing, staffing, directing and controlling a project, including a mastery of delegation.

deregulation Rank brought about a demand for project leaders with refined skills, Cook says. "A project leader several projects himself - says he also stresses an understanding of organizational and political aspects of a project.

Tannura concurs with this emphasis, noting that it is important for employees to understand their positions in relation to the entire corporate struc-

Sharpen up those skills

He also recommends that aspiring project leaders master online data base programming and working with users and hone their communications skills.

While a prospective project leader should be a contributor in his present work, technically competent and able to get along with others, educational background also plays a role in the se-

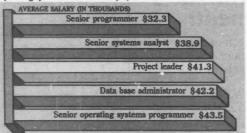
Among recent college graduates, Dominion's Cook looks for "a demonstrated predictor of fu-ture performance," such as better-than-average grades.

Education becomes more important further down the road, Grannis says. "Once a person gets a shot at management, he will move further faster depending on his academic skills," he says. "If someone in a project leader position has not completed their degree requirements, they should do it now. A degree is not important at the first level of management, but for promotion it becomes increasingly crit-

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Project leadership boosts developers' pay toward that of senior operating systems and data base professionals



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leaders he promoted have continued to move up; one is now a manager of application systems, the other a data base administra-

Bob Cook, assistant vice-president at Dominion Bank Shares, says he looks for the same combination of technical expertise and interpersonal skills as Wolfe when appointing a must recognize an elegant solution when he or she sees one, he says. "These are solutions that meet not only the requirement of the user, but interfacing and integration requirements as well.

Cook - who started at the banking company 11 years ago as a systems analyst supporting a project leader before leading

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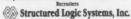
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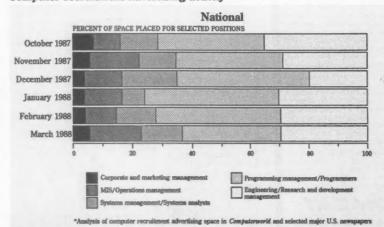
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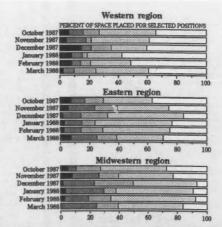
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MARKETPLACE

Secondary markets work for all

Users, manufacturers can benefit from equipment on the used market

BY THOMAS J. DONOVAN

At the recent Computer Dealers and Lessors Association (CDLA) spring convention, IBM reviewed its Feb. 26, 1988 announcement of maintenance qualification for used equipment.

The announcement rescinded IBM's earlier policy, which required a Maintenance Agree-Acceptability Letter (MAAL) in order for equipment that was deinstalled, modified or reinstalled by anyone other than IBM to be eligible for free re-

This earlier policy was announced Nov. 3, 1987 and then deferred to March 1, 1988. The fee for obtaining a MAAL had been set at an amount equal to one month's maintenance.

Obviously, dealers in used equipment, especially independent installers and refurbishing centers, anticipated a severe impact on their business. As a result of the CDLA's and other groups' negotiations with IBM, IBM rescinded the fee policy for a MAAL.

It is important to note that

had the Nov. 3 policy not been rescinded, sellers would receive less value for their equipment if a MAAL were required. Thus, the CDLA and others, by convincing IBM to rescind, in effect protected the users' investment in existing equipment.

As far as can be determined, there was no uproar from the user community regarding the earlier announcement, which could have taken money out of their pockets.

Attitude adjustment

The above is just a small example of a manufacturer's ability to modify its existing policies that has an impact on the residual valme of its installed hase

In many cases, the initial user of equipment has the attitude that such policy changes only affect subsequent users. That attitude is absolutely wrong. An adverse change in residual value as a result of a manufacturer's policy change will, dollar for dollar, be taken out of the sale value of

Other examples of manufacturers' policies that adversely impact users' investments in equipment include the following: · Lack of maintenance support for used equipment.

· Higher maintenance costs for used equipment. · Unreasonable or unnecessary

fees for recertification. Heavy relicensing fees for sys-

tem software. · Burdensome fees or procedures for installing and using

used equipment. • An attitude by the manufacturer that its product, which you

bought used from someone else. is just junk.

The original user must take a much more active role in protecting his investment. The user must provide for the marketability of his equipment on the secondary market by ensuring that a subsequent user can obtain maintenance coverage and system software on reasonable terms and at reasonable prices.

This objective is accomplished by adding clauses to the purchase contract, or the lessor's purchase contract in the case of a lease, which assures the transferability of system software and maintenance rights. It would be nice to know that the \$500,000 purchase you made two years ago, which no longer meets your needs, can be sold for \$250,000 hassle-free and not junked.

Pros and cons

Some manufacturers view a secondary market for their equipment as negative, because equipment on the used market competes with its new products. That fact is true from an individual-transaction point of view. Just ask any salesman who lost a deal to a competing piece of used equipment.

However, from a macro point of view, a secondary market creates a user perception that his residual value will be protected. that he will be able to dispose of the equipment that no longer meets his needs, and that he will be able to obtain add-on features at a reasonable price, especially in the later years of a product's

The existence of a secondary market for equipment has a beneficial impact for leased equip-

If such a market exists, the lessor can anticipate some residual value for the equipment at the termination of the lease. This fact will translate into a lower rate for the lessee which, in turn, will support a desirable operating lease classification for

accounting purposes, according to the Financial Accounting Standards Board's Statement 13 accounting for leases.

A manufacturer whose equipment can support an operating lease will have an advantage over a manufacturer whose equipment generally qualifies for only capital lease classification. All the great technology in the world will not convince a finance person who needs to have leases classified as operating to acquire equipment with no secondary

Market support

Needless to say, IBM is the biggest in the industry for a number of reasons. One of those reasons is because it has allowed a secondary marketplace to exist for its equipment.

Digital Equipment Corp. is another example of a growth company in which a viable secondary marketplace has existed

for many years.

Other manufacturers should note that support for a secondary market may not necessarily make them grow, but an attitude that their own used equipment is somehow second-class will most surely limit their market share in the long run.

For more information, contact IDC Financial Services' Terri LeBlanc at 617-872-8200.

IBM waxes 3745 board for high-end market

BY BENJAMIN GALE

On Jan. 26, IBM introduced the 3745 high-end communication processor. This processor offers two to four times the performance and up to four times the bandwidth of the 3725. The 3745 is available in two models, the Model 210 and the Model 410, which offer up to 50% better price/performance than the previous high-end 3725 frontend processor.

The 3745 processor is based on three application-specific in-tegrated circuit (ASIC) chips. Each chip can hold up to 40,000 circuits, which is three times the capacity of previous IBM ASIC

The 3745 Model 210 began shipping in March, and the Model 410 is expected to ship in Sep-

Price overlap

While the base price of the 3725 is significantly lower than that of the 3745, prices appear to cross over at medium to large configurations. This comparison excludes the fact that the 3745 also offers greater growth, better performance, hot plugability, a smaller footprint and reduced operating costs.

Currently, the 3725 is positioned in the middle of IBM's communication controller product line, with the recently an-

IBM communication processors Current retail fair market value

	Date shipped	IBM base list price	Percent of list price
3725 Model 1	1Q 1984	\$75,000	63%
Model 2	1Q 1984	\$60,500	63%
3745 Model 210	March 1988	\$125,000	A STATE OF THE STA
Model 410	Sept. 1988	\$188,000	

" Currently not available on the secondary market

ndary market Difformation provided by IDC Financial Services Corp. CW CHART

3745 technology.

The IBM 3725 communication controller has fallen 23% on

HE 3725 will be replaced sometime within the next 12 to 18 months, when IBM announces a new mid-range communication processor model that will use the existing 3745 technology.

nounced 3745 coming in at the high end and the 3720 positioned at the low end. However, IDC Financial Services Corp. said the 3725 will be replaced sometime within the next 12 to 18 months, when IBM announces a new midrange communication processor model that will use the existing

the used market since the beginning of this year. This drop can be attributed to a combination of factors, such as the following: • The announcement of the

3745. • The expiration of three- and four-year leases, which has caused increased volumes of 3725s on the secondary market.

Secondary market sources indicate that activity is brisk within the 3725 marketplace. Currently, the supply of 3725 Model 2s has loosened on the used market because three- and four-year leases are expiring. However, some 3725 Model 2 shops are opting to upgrade to a 3725 Model 1. Since used values for the 3725s have dropped significantly, they have become bargains on the used market.

Secondary market sources have reported conflicting views as to the future of the 3725. Some say that 3725 customers have ample capacity with their existing 3725s for both current and future communications processing needs. Thus, these dealers say the supply of 3725s will soon tighten up and values will

On the other side, some secondary market sources say the 3725 values will continue to plunge as customers continue to move from 3725s to 3745s.

Generally, customers who have reached maximum capacity with their 3725s or have multiple 3725s are moving to the

Fortune telling

What lies ahead for the 3725? IDC Financial Services savs the announcement of the 3745 represents the first step in the effective replacement of the 3725. The second and final step will be the eventual rippling down of the 3745 technology into a lower priced unit.

The shipment of the 3745 Model 410 and additional features in September could be a further blow to the 3725's life. Many customers who have already purchased Model 210s have orders in for the upgrades to the Model 410 when it becomes available. The next several months will prove the fate of the 3725s further on the secondarv market.

For more information, contact IDC Financial Services' Terri LeBlanc at 617-872-8200.

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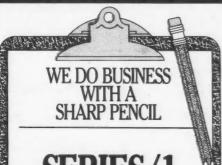
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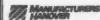
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S/38-400	0.75	6 to 8	@3090-120E	7.4	32 to 64
9375-60	0.76	8 to 1/15	†4381-24	7.8	16 to 64
4341-1	0.88	2 to 4	'4381-92E	7.8	16 to 64
\$/38-600	0.98	8 to 18	3083JX	8.8	8 to 32
\$/38-700	1.1	16 to 32	3090-150	9.2	32 00 64
4381-11	1.4	4 to 16	3081D	19.0	16 to 32
4361-5	1.45	2 to 12	3090-150E	10:0	32 to 64
4341-2	1.5	2 to 16	3081GM	1130	16 to 64
9377-90	1.6	8 to 16	3090-180	35.4	32 to 64
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4381-1	2.1	4 to 16	3090-200	27.7	64 to 128
4381-2	2.7	4 to 32	3084QX	28.7	32 to 128
4381-12	2.7	8 to 32	3090-200E	31.0	64 to 128
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3083EX	4.4	8 to 32	3090-400	50.0	128 to 256
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5868	22.0	32 to 256	AS9070	16.0	16 to 64	
5870	21.7	32 to 128	AS/VL-80	17.1	32 to 256	
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Training

Training costs add up

Factors include facilities, staff and equipment

BY MARY GROVER

There's no doubt about it: Implementing in-house MIS training is expensive. It can cost anywhere from \$2,500 to \$7,000 a year to train one staff member, according to MIS managers in the field.

Whatever the budget for a training program, managers who will foot the bill must consider certain basics that may involve up-front costs, including facilities, personnel and equipment.

The first consideration is finding a place to conduct classes. One option is to find room inside a company building. "I imagine in most companies, space is at a premium," says John Black, manager of information systems support services at Quaker Oats

Real money More than likely, a company will need to budget for this space as for any other. "It's as real as paying someone on the outside, because it must go into the budget," Black says.

Renting classroom space outside the company is an alternative, although often an expensive

Springfield, Mass.-hased Massachusetts Mutual Life Insurance Co. rented half a floor of a downtown office building four years ago, but it became too ex-

"Rental of an office building is horrendous," says Judy Brainerd, a senior project manager at Massachusetts Mutual. "And Massachusetts Mutual. lugging people and materials there - not to mention parking - these are all additional costs. For us, it was just not cost effec-

Build your own

Although it is the most expensive method, building a center can be the smart choice for some large companies with heavy training needs.

At accounting and consulting firm Arthur Andersen & Co., renting outside facilities was fine until the demand for training became too great.

"Building our own center be-came much more economic," says Mel Bergstein, managing partner of technical compe-tence. "What you must keep in mind is that this requires large volumes because of the significant capital involved.'

Arthur Andersen's training

center is a converted 140-acre school campus that can accommodate approximately 1,400

Staffing considerations include teachers and administrators. For a company with no experience in training, outside vendors can be of assistance. In addition to materials, some training companies provide staff on a lease basis.

ever hire full-time trainers. The company tried using information center staff members as trainers, but "they worked out better as consultants," he says.

Black says he found outside vendors provided the correct mix of expertise and training know-how. "You can find experts in specific subjects instead of having one or two people on your staff who are experts in ev-

HATEVER THE BUDGET for a

foot the bill must consider certain

basics that may involve up-front costs, including

training program, managers who will

plementing a self-study program. Quaker Oats makes extensive use of self-study for MIS.

Equipment costs

The nature of MIS training demands a hands-on approach. 'These days, it's hard to do MIS training without the equip-ment," Bergstein says. A major cost lies in procuring an adequate number of workstations, personal computers or terminals and in wiring classrooms.

In its two 12-person class-rooms, Quaker uses six microcomputers for students and one for the instructor. The company's self-study classrooms make use of \$10,000 workstations.

Additional costs lie in securing desks, audio equipment, video players and projectors, screens and other accoutrements. Black suggests looking for locations that are already wired in order to cut costs.

Because training is expensive, and it is so difficult to assess the payback on it. Brainerd suggests finding a champion in top management to support your efforts. "Whatever you come up with is going to cost more than the immediate payback," she says. "You need someone who instinctively feels it's a good thing to do.

Grover is a Computerworld copy edi-

facilities, personnel and equipment. Massachusetts Mutual's Brainerd suggests using such a vendor when launching a new course. "Sometimes it's effective to bring in [a vendor like this] for a year while you get your act together, and then, us-

own training," Brainerd says. Massachusetts brought in a training vendor at a cost ranging from \$5,000 to \$15,000 a week, Brainerd says. The company finds the method to be the cost-effective for shortterm, specific or sporadic needs or when training volume is low.

ing their methods, develop your

On the other hand, Black says he is not sure Quaker Oats will erything, which is impossible."

At Arthur Andersen, a fulltime administrative staff develops curricula, prepares materials and evaluates the effectiveness of classes and training tech-

Field professionals do the actual training, spending an extensive amount of time absorbing prepared materials. "This is an expensive way of doing it," Bergstein says; he points out that it involves identifying the appropriate instructor and interrupting his schedule to fly him to the training center.

There is also the option of training without teachers, by im-

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AT Model 339	\$3,500	\$3,700	\$2,625
PS/2 Model 50	\$2,300	\$2,475	\$2,225
PS/2 Model 80	\$5,825	\$6,100	\$5,275
Compaq Portable I	\$825	\$900	\$525
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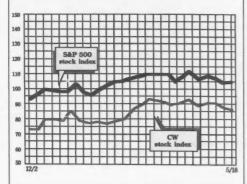
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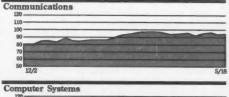
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	Recovery Products & Services	June 24
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Aug. 29	DB2 Market	Aug. 12
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	Large, Medium Scale and	
	Special Purpose Systems	Sept. 2
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	Personal Computers and	
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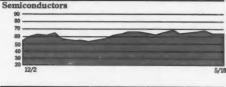


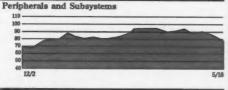
Last Week	This Week
93.4	93.8
99.0	97.4
96.8	95.4
65.6	65.4
84.0	79.5
113.7	117.8
87.6	86.9
105.8	105.0
	93.4 99.0 96.8 65.6 84.0 113.7 87.6











easing	Companies		
140			
130			
110			
100			
80			
70			
12/2		CW CHARTS	

Computerworld Stock Trading Summary

EXCH		52-W RAN (1)	GE	CLOSE MAY 18 1988	WEEK NET CHNGE	WEEK PCT CHNGE
	Communications	and	l Ne	twork S	Servic	es
COCCCCCCCCCCCC	AMERICAN INFO TECHS CORP ANDREW CORP ATORE WORD TO THE ATORE ATAT AMERICAN CORP INC AVANTER INC AVANTER INC AVANTER INC CORP ELL ATLANT CORP COMPUTER NEW ORD TECH CONTROL CORP ONLY CORP COMPUTER NEW ORD TECH CONTROL CORP DIGITAL COMM ASSOC FIREDONES AND TECHNOLOGY FIREDONES AND TECHNOLOGY FIREDO	100 18 3 36 6 17 35 80 44 6 6 40 10 49 33	74 11 20 2 6 16 61 29 2 1 25 4 20 14	86.25 14.50 1.63 26.00 2.06 7.25 20.38 65.38 38.75 1.31 31.38 7.00 31.75 20.25	0.5 -0.1 -0.9 0.3 0.4 -0.3 0.1 0.1 0.1 -0.5 -0.3 -1.0	0.6 -3.3 -7.1 -3.3 17.9 3.6 1.9 -0.4 0.3 3.7 -7.7 -1.6 -6.7 0.8 -4.7
ZOZOZZZOZOZOZZZZZZZZZZZZZZZZZZZZZZZZZZ	CANDAL TECHNOLOGIES GANDAL TECHNOLOGIES GANDAL TECHNOLOGIES GENERAL DATACOMM INDS GTE CORP INFOTRON SYS STORP INFOTRON SYS STORP INFOTRON SYS STORP INFOTRON SYS STORP INFOTRON SYS CORP INFOTRON SELECTORY INFOTRON INFOTRON INFOTRON INFOTRON INFOTRON INFOTRON INFOTRON INFOTRON INFOTRO INFOTR	7 10 13 45 14 66 16 15 17 13 24 30 78 34 40 20 46 26 37 15 60	2 5 3 29 5 42 7 6 7 7 14 12 58 23 4 1 23 8 22 12 17 5 43	3.13 6.50 3.38 13.00 45.13 9.50 13.63 15.13 9.50 61.36 22.25 4.13 4.50 29.69 13.25 35.50 29.69 13.25 35.50 29.69	0.1 -0.4 0.0 -1.4 1.5 -1.3 0.1 -0.1 -0.3 -0.9 1.0 -0.3 0.4 0.0 -0.1 0.5 1.5 0.1	4.2 -5.5 0.0 -3.9 -2.7 -1.3 -0.9 -2.6 -5.0 -4.7 -3.6 -4.4 -4.5 -0.0 -0.0 -0.0 -0.0 -0.0 -0.0 -0.0 -0

Computer Syste

20000 2 2 200 200 2 2 2 2 2 2 2 2 2 2 0 2 0 2 0 2 0 2 0	ALTOS COMPUTER SYS AMDAHL CORP APOLLO COMPUTER INC APPLE COMPUTER INC	6 3 15 9 50 19 25 9 60 28	5.63 8.88 44.25 15.00 39.75	-0.1 0.0 -0.6 -0.5 0.3	-2.2 0.0 -1.4 -3.2 0.6
N	BOLT BERANEK & NEWMAN BRITTON LEE INC	25 12	15.50	-0.4	-2.4
N.	COMPAO COMPUTER CORP	79 34	49.50	-2.0	-3.9
0	COMPUTER AUTOMATION INC	16 6	9.13	-0.1	-1.4
Ã	COMPUTER CONSOLES INC	11 2	7.13	0.0	0.0
Q	CONCURRENT COMP CORP	24 11	17.75	1.3	7.6
Ñ	CONTROL DATA CORP DEL	38 18	25.25	0.3	1.0
Q	CONVERGENT TECH	9 3	3.13	-0.2	-5.7
g	CONVEX COMPUTER CORP CRAY RESH INC DAISY SYS CORP DATA GEN CORP	19 6	7.50	-0.4	-4.8
M	CRAY RESH INC	119 47	75.75	-6.4	-7.8
Š.	DAISY SYS CURP	10 5 37 16	9.00	-1.0	2.9
M	DATAPOINT CORP	9 3	5.38	0.0	0.0
	DIGITAL EQUIP CORP	200 99	101.75	-0.6	-0.6
N	FLOATING POINT SYS INC	12 3	3.25	-0.3	-7.1
M	GOULD INC	34 8	13.38	-0.6	-4.5
N	HARRIS CORP	41 22	27.88	-0.6	-2.2
Ñ	HEWLETT PACKARD CO	74 36	57.00	-3.8	-6.2
N	HONEYWELLING	91 49	69.00	1.6	2.4
N	IBM	176 102	108.88	0.1	0.1
Q	INFORMATION INTL INC	15 9	12.25	-0.8	-5.8
ġ.	IPL SYS INC	3 1	1.69	-0.1	-3.5
Q	MASS COMPUTER CORP	14 4	4.38	0.1	2.9
N	MATSUSHITA ELEC INDLLITO MEGADATA CORP	228 103	211.00	-1.0	-0.5 4.2
×	MENTOR GRAPHICS CORP	39 14	28.50	0.1	0.9
ž.	NBI INC	14 4	4.00	0.0	0.0
M	NCR CORP	87 50	58.75	0.3	0.4
N	PRIME COMPUTER INC	31 12	15.63	-0.4	-2.3
0	PYRAMID TECHNOLOGY	14 5	12.50	0.5	4.2
õ	STRATUS COMPUTER	40 15	27.75	-0.3	-0.9
Q	SUN MICROSYSTEM INC	46 14	34.50	0,0	0.0
Q	SYMBOLICS INC	5 1	1.38	-0.3	-15.4
N	TANDEM COMPUTERS INC	37 16	17.63	-0.1	-0.7
N	TANDY CORP	57 28	44.25	-0.5	-1.1
N	ULTIMATE CORP UNISYS CORP	37 12 48 24	13.00	-0.1	-1.0
A	WANG LABS INC	48 24 19 10	10.63	-0.3	-2.3
-	HANGE CHOO INC	19 10	10.03	-0.3	-2.3

Software & DP Services

N ASS COMPUTERS INC: 30 11 1 10.00 -0.4 -2.0 AMERICAN MORT YS'S INC: 20 9 14.50 -0.8 -4.9 AMERICAN MORT YS'S INC: 10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1							1
Q AMERICAN MIGHT SYS INC 20 9 14.50 -0.8 -4.9 AMERICAN SOFTWARE INC 19 6 13.13 -0.0 0.0 AMERICAN SOFTWARE INC 19 6 13.13 -0.3 0.0 0.0 AMERICAN SOFTWARE INC 19 6 13.13 -0.3 0.0 0.0 AMERICAN SOFTWARE INC 11 4 9.13 4 0.3 -1.1 0.0 0.0 AMERICAN SOFTWARE INC 11 4 9.13 4 0.3 -1.1 0.0 0.0 AMERICAN SOFTWARE INC 11 6 10 13.50 -1.3 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Q	ADVANCED COMPTECH	6	1	1.25	0.0	0.0
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Q AMALYSTS INTL CORP 10 4 7.88 -0.1 -1.6 A ASHRON TATE OF THE PROPRIES OF THE	9	AMERICAN MGMT SYS INC					
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Q ASHTON TATE 33 13 24.50 -1.3 -4.59 ASHCOMENTERSYS INC 16 6 13.50 1.0 8.0 AUTDOESH RC 34 12 22.25.25 0.0 2.58 Q AUTDOESH RC 34 12 22.25.25 0.0 2.68 BOULE & BABBARGE INC 12 5 8.50 0.0 0.0 COMPUTER RASSOCINTI, INC 37 15 25.00 -0.3 -1.0 COMPUTER RASSOCINTI, INC 37 15 25.00 -0.3 -1.0 COMPUTER SCIENCES CONF 73 38 38.88 1.1 4 2.44 COMMENTER SCIENCES CONF 73 38 38.88 1.1 4 2.44 COMMENTER SCIENCES CONF 73 18 38 38.88 1.0 4 2.55 COMMINITIA CURRICATION CONF 11 7 4 6.25 -0.5 -0.4 -5.7 COMMINITIA CURRICATION CONF 22 12 15.75 -0.5 -0.4 -5.7 COMMINITIA CURRICATION CONF 14 7 7 0.0 -0.4 -2.3 COMMINITIA CURRICATION CONF 18 4 7 7 0.0 -0.0 -0.0 ADATA ARCHITECTS INC 16 7 7 13.75 -0.0 -0.0 GEMERIA MITRICALS E 18 12 22 25 -0.3 -7.3 GIANCIA CONTROLL 18 12 2 25 5.0 -0.1 -0.6 GIANCIA CONTROLL 1	N		11				
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A DATA ARCHITECTS INC 16	ä						
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0 Intellicione MC 11 2 2.75 -0.3 -8.3 NEAME IND 16 6 11.50 0.0 0.0 Q LOTUS DEV CORP 40 19 22.25 -0.1 -0.5 -5.9 MINISTORIO PRO INTLO CORP 78 37 2.85 0.1 -2.5 -5.9 MINISTORIO PRO INTLO CORP 79 37 16 0.8 -4.5 -0.0 -4.5 -0.0 -4.5 -0.0 -0.0 -4.5 -0.0	6	INFORMIX CORP	31	12	18.50	-1.5	-7.5
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Q SARE SUPTIMER INC. 20 5 0.25 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	ă.				20.75	-1.4	
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Semiconductors

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Make a wish

Leasing Companies

Deficit trim no help to HP, Cray as inflation fear takes course

Wall Street learned an old lesson last week: Be careful what you wish for, because you may get it. Investors translated a reduced trade deficit into the promise of higher inflation rates and sent the Dow Jones industrial average into a 56-point mid-week plunge that took several computer issues with it.

Hewlett-Packard Co. felt the pinch from analysts' fears that margins and domestic orders were off, falling 6 points from a week earlier to finish Thursday at 561/2. Supercomputer maker Cray Research, Inc. was dealt a double whammy; Shearson Lehman Hutton, Inc. cut Cray's earnings estimates and investment rating, while IBM announced plans to develop a supercomputer. Cray's stock fell 5% points to 76% late in the week.

In other action, Compaq Computer Corp. lost 234 points to 4914, Amdahl Corp. slid 21/2 points to 441/2, NCR Corp. dropped 11/2 points to 59, Ashton-Tate Corp. retreated 1¼ points to 39¼, Apple Computer, Inc. dipped 1¼ points to 39¼, Stratus Computer, Inc. fell 1 point to 27¾ and Digital Equipment Corp. lost 1/4 of a point to 1021/4. The few gainers included 3Com Corp., up % of a point to 201/2, and IBM, up 1/2 to 1101/2.

IBM turning screws on cloners

Retroactive patent tariff seen as tool forcing PS/2 copiers to toe the line

BY DOUGLAS BARNEY, ALAN J. RYAN and ED SCANNELL CW STAFF

IBM's threat to collect retroactive royalties from firms that have for years copied its Personal Computer line is broadly viewed as a way of controlling and limiting the cloning of its newer Personal System/2 series.

The disclosure, which IBM confirmed last week, cast a pall over a user base that has become accustomed to an industry marked by intense competition and ever-falling prices. If IBM is serious about collecting 1% to 5% royalties on sales of copies of its older and out-of-production PC line, today's plethora of cloners may be radically diminished.

Although IBM is initially targeting firms that approach it for PS/2 licenses, it has also left the door open to go after the entire clone market for patent infringement.

Shooting own foot?

But the biggest threat is to PS/2 clones and the IBM PS/2 itself. Users have said all along that they will not completely accept the PS/2 line until there are clones available in that market as well. While IBM is apparently encouraging the competition, the company could use back royalties to hand-pick its competitors.

For IBM, the rules of the game are simple. "We will not sign new PS/2 licensing agreements with companies that refuse to recognize the past liabilities for previous-generation machines," IBM spokesman Jim Monahan explained. IBM is offering to cloners that sign up a 1% royalty rate on all PC sales prior to April 1, 1988. "That is through the end of this year," warned Monahan, who added that after April, royalties could go as high as 5%.

He said the threat from IBM is not new, however. "IBM all along has been pursuing manufacturers whose compatibles use IBM's patents and haven't licensed those patents."

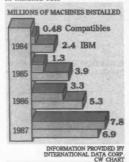
Despite the threat, few users or analysts have a firm handle on exactly what IBM intends to do. It is clear, however, that the royalties are an extension of IBM's long-term goal of increased market control.

"They are trying to make the cost of entry [into the PS/2 mar-ket] very significant. In effect, they have control over who gets in," argued Bruce Stephens, a PC analyst with International Data Corp., a Framingham, Mass., market research firm.

Whatever the possibilities, few expect the result to be pretty, with higher prices on clones and potential catastrophe for smaller cloners. "It will make it harder for people to develop cheap clones. We would expect the cheaper alternatives to disappear," said Dave Karney, vice-president of MIS at Southland Corp.

Money in the bank?
The PC-compatible industry—
target of IBM's patent fee

target of IBM's patent fee demands — has surpassed IBM in installed base



Art Skopec, a senior PC analyst at Memorial Sloan-Kettering Cancer Center in New York, concurred. "They're trying to kill the clone and make money on it." he said.

The issue of prior patents arose with the influx of clone vendors that have approached IBM in search of PS/2 patents. The situation was capped by the near simultaneous announcements by the Texas twosome, Dell Computer Corp. and Tandy Corp., of PS/2 clones late last month.

In fact, some larger firms are more fortunate and are able to work out cross-licensing agreements with IBM because they have technology that IBM may be interested in. Tandy has had such a cross-licensing deal for eight to 10 years, according to Ed Juge, director of market planning at Tandy.

In its first-quarter report to users, which will be released this week, Compaq Computer Corp. President Rod Canion says his firm is now negotiating a crosslicensing agreement with IBM on patents.

"While the outcome of the negotiations is uncertain, the company is accruing for net payments in the costs of negotiating the licensing agreement with IBM." Canion writes.

IBM," Canion writes.

IBM may be entering dangerous waters, with a user backlash
possible if the firm presses its
cases too aggressively. "If anything, their attempt to hurt their
competitors who are producing

good quality equipment would make me look at IBM twice," Memorial Sloan-Kettering's Skopec said.

For some, increased prices on clones would bring about more dramatic results. "If it were to increase the price too much, we would look into building our own PCs," said Matthew Meldon, micro manager at the Claridge Casino Hotel in Atlantic City. So far, most organizations that are building PCs for internal use are educational institutions.

Others said the absence of the low-cost clones in the PS/2 marketplace would not have been surprising even without the royalty announcements from IBM. "You wonder why those folks would want to build PS/2 compatibles anyway. If their marketplace is a \$500 PC, why build [IBM's Micro Channel architecture] anyway, the benefit of which is supposed to be for corporate environments?" Thomas O'Leary, director of MIS at North American Philips Corp. in New York.

Pure timing was one of the most intriguing aspects of the disclosure from IBM. "They waited to do this 'You are going to pay for your past, sins announcement' until they had Micro Channel established as a true standard" said Andrew M. Seybold, publisher of "Andrew Seybold's Outlook on Professional Computing."

Atsen

The clone vendors seemed as confused as anybody. "We are still trying to understand IBM's licensing and patents position for future products. We have not discussed any retroactive payments with IBM," said Glen Nelson, a spokeman for Zenith Data Systems. According to Nelson, Zenith has yet to sign any licensing agreements covering any of IBM's PC products.

In addition to market risks, experts cautioned that IBM is taking certain legal risks with its royalty strategy. "If they really want to drive the low-cost clone makers out of business, they could ask for a higher royalty" or could simply reject the offer, according to Steve Kahn, a patent attorney wth Davis Hoxie Faithfull & Hapgood in New York.

In what is perhaps the most unusual and shocking possibility, IBM has the right, if its patent claims ring true, to sue warrs of infringing microcomputers. "Theoretically, any of us who have a clone on our desks could get sued by IBM and enjoined from using," Kahn said. While it is an interesting theoretical point, none of the many lawyers interviewed last week deemed it a practical possibility.

IBM DBMS

FROM PAGE

The first phase of IBM's distributed data base, therefore, is expected to include compatible SQL for the two data base managers, which would allow a user to draft a query and run it against both DB2 under IBM's MVS operating system and SQL/DS under the firm's VM or DOS/VSE, according to a West Coast source knowledgeable of IBM's work in its Santa Teresa, Calif., development lab.

Pleasant surprise

IBM officials acknowledged that they have been surprised by customer interest in distributed data base. At a Washington, D.C., conference last year, Norris van den Berg, IBM's director of advanced data base products, said his colleagues were impressed with a survey showing that DB2 customers were nearly as concerned about distributed capability as about referential integrity. He said the issue had popped up as an unanticipated customer demand during the previous year.

The distributed data base announcement is expected to come close to the time that OS/2 Extended Edition, IBM's Personal System/2 operating system with a data base manager built in to it, goes into delivery in July. The SQL-based DBMS will be given a tie to the mainframe DBMS as part of IBM's overall strategy, said Richard Finkelstein, president of Performance Computing, a relational data base consulting firm in Chicago.

Other sources pointed out that IBM already has Host Data Base View software and Enhanced Connectivity Facility for linking PCs into mainframe environments, but ties to the data base managers have yet to be announced.

IBM's existing Distributed Data Management is expected to serve as the temporary receptacle and translator for data in transit between operating systems in an IBM distributed scheme, noted Paul Hessinger, vice-president of Computer Task Group, Inc. in Buffalo, N.Y.

In addition to continuing its success with DB2 and SQL/DS along broader lines, IBM wants to launch distributed data base products in the same time frame as Oracle Corp. Oracle is scheduled to announce its Transaction Processing System with limited distributed capability June 12, said Anthony Deakins, vice-president of Auxco Consulting in Orlando, Fla.

Industry sources said the distributed product set is expected to unfold over a three-year period and feature the following: • In phase one, an "atomic," or

 In phase one, an "atomic," or single-user, SQL query will be executed by a single remote data base server, with no echoing or

recovery features — an approach that is "not really usable for production purposes," said George Schussel, president of Digital Consulting, Inc. in Andover, Mass.

 In phase two, an SQL query will be launched against multiple remote data bases and will receive data without the user knowing where the data was located. Multisite updates will still be off-limits.

• In phase three, multiple-user SQL queries will find their way through the network to many DBMSs. A two-phase commit procedure will permit remote updates to the data base with minimal danger of data integrity loss due to system failure. The ability to execute updates will be tied to security procedures, observers said.

Referential integrity for SQL/DS, another step toward allowing it to catch up with DB2, is expected to be announced along with the distributed capability, the West Coast observer said.

DB2 users pointed out that IBM's Data Extract Facility, which allows SQL queries to retrieve data from both IMS and DB2 relational data bases and deal with it as a relational set, along with LU6.2 program-to-program communications, are likely to be major components of a distributed DB2 system.

In addition, IBM's TSAF is expected to serve as an avenue for attaching users to SQL/DS, said Joseph D. Jackson, a DB2 manager at Amoco Corp. in Chicago.

Silverlake too?

Industry sources said there is also a possibility that IBM will unveil an SQL-based relational system for its unannounced midrange machine, code-named Silverlake.

Several users, however, expressed surprise that IBM would come out with distributed data base components on the heels of its April 19 DB2 Version 2 announcement.

Distributed data base "is an area where I haven't seen IBM show a lot of leadership. We would be most pleasantly surprised if IBM was able to say how it plans to manage distribution issues," said the MIS director of a New York-based user of DB2 and IBM Personal Computers.

A participant in the Society for Information Management chapter in northern New Jersey who requested anonymity said he and several other representatives of Fortune 500 firms spend much of their time talking about the issues of distributed data management. "If we're typical, perhaps a quarter of the industry has dug in and begun dealing with distributed issues," he said.

The announcement, if it materializes, will be the result of work by Juan Dash, IBM's director of distributed data base strategy, and van den Berg.

ICA show tall on boasts

Multiplexers lead parade, but details are scant

BY KATHY CHIN LEONG

ANAHEIM, Calif. - At last week's International Communications Association (ICA) conference, communications managers found T1 multiplexers. Bob Hope, network management products and Rosemary Clooney all under the same roof.

Though promises of multivendor connectivity were pervasive, many vendors announcing products were unable to provide pricing and delivery dates

T1 multiplexers, from the very large to the small, led the product parade. Boasting that it has the largest entry on the market, Newbridge Networks, Inc. in Herndon, Va., unveiled 3645L Mainstreet, a T1 multiplexer that can handle up to 256 T1 circuits. According to product manager Brian NeSmith, the multiplexer consists of eight of Newbridge's smallest 3645S Mainstreet nodes joined in one

For Avanti Communications Corp. in Newport, R.I., smaller means better. The company unveiled the ONX 3000, a T1 multiplexer that can handle up to 24 voice and data channels. Although designed for a small network of about four nodes, the device is compatible with the larger T1 multiplexer, ONX 5000.

During the next few years, an emerging fad among data communications equipment vendors will be to offer custom network planning services.

multiplexer High-end T1 maker Network Equipment Technology, Inc. (NET) in Redwood City, Calif., said it will offer Unix-based Network Design and Analysis System that will create a network topology for users, forecast network growth and analyze node or line failures. The service, due out by September, will be offered throughout the company's regional offices.

As expected, NET competitor Timeplex, Inc. in Woodcliff Lake, N.I., demonstrated Link/ Design, a similar network design tool. Timeplex officials said the product will give users a variety of what-if scenarios to determine the solution that would make the most sense.

High priority

For many users, high on the wish list at ICA were network management products. Among the vendors demonstrating productspecific management systems, MCI Communications Corp. and Tymnet, McDonnell Douglas Network Systems Co. both introduced network management products that will support IBM's Netview environment.

MCI President Bert Roberts Jr. said the company will bring Integrated Network Management Services (INMS) to the market to allow users to monitor, analyze and control their MCI lines remotely. INMS will be phased in during an 18-month

INMS will help users track both voice and data services. Roberts stressed. An IBM Personal System/2 Model 80 serves as the user workstation that allows customers to view the MCI INMS host computer.

Illinois phone effort puts data links last

BY IEAN S. BOZMAN

As the western suburbs of Chicago struggled through their second week of telephone-service disruption caused by a switching-station fire, large corporations scrambled to regain control of their telecommunications networks.

Illinois Bell continued to repair its damaged Hinsdale, Ill., switching station, where a May 8 fire destroyed 118,000 long-distance lines and 30,000 data lines and damaged 35,000 local voice lines [CW, May 16]. But corporate users complained that the work was progressing too slowly

to save them from costly disrup-

tions of their computer-to-computer links.

A team of 200 workers from AT&T, Ameritech and Illinois Bell has been working around the clock since May 11 to install a new switch. Moving at a pace of 7,000 lines a day, Illinois Bell revised its projection for resumption of voice and data service from June 15 to June 1.

Even that improvement was little comfort to users who have been unable to establish IBM Systems Network Architecture connections since the fire, "People from Illinois Bell came around and asked us what we would like to see restored first said Greg Pinkowski, VTAM systems manager at J. I. Case, a Tenneco, Inc. subsidiary that manufactures farming and construction vehicles.

'Our priority was to get the T1 line up so we could reconnect our IBM 3090 with the IBM 3090s at company headquarters in Racine. Wis.." Pinkowski said. 'Now, it looks like the T1 line will be the last thing to come back up."

Meanwhile, Pinkowski is considering the purchase of several 9.6K bit/sec. modems that would send mainframe data over the three long-distance lines so far restored between Case offices in Chicago and Racine.

One at a time

Illinois Bell spokesman Tim Bannon explained that dedicated data lines, such as Case's T1 line. were being connected after local and long-distance voice lines. "Our priority was to re-establish emergency services, including police and fire departments, Bannon said. By last Monday, most long-distance lines routed through the Hinsdale gateway had been reconnected.

In many cases, Illinois Bell said, the reconnection order was based on the availability of electrical contacts on the damaged

1A ESS analog switch. "When we could find a block of good numbers, we restored them, Bannon said. "By next week we'll have 21,000 of the 35,000 voice lines on a new switch.'

However, unreliable quality and difficulty in establishing long-distance links continued to create large-scale computer disasters throughout the Chicago area. Many sites with reconnected lines reported having to try long-distance numbers several times before connecting. Among the major computer disruptions in the area were the following:

• Three corporations - United Stationers, Inc., A.M. Castle & Co., a metal-parts distributor, and the Jewel Companies, Inc. supermarket chain erating out of Comdisco, Inc.'s disaster recovery services hot sites With all three Comdisco hot sites in Chicago filled. United Stationers was forced to resume operations from Comdisco's Carlstadt, N.J., hot site.

· Comdisco's disaster recovery services was at first unable to provide telecommunications support from its Wood Dale. III. hot site. AT&T said. AT&T Network Services sent 20 technicians to establish a link between an AT&T System 85 switch at the isolated hot site and another System 85 at Comdisco headquarters in Rosemont, Ill.

· Eli Lilly and Co., an Indianapolis pharmaceuticals firm, was unable to route its data traffic to a Lisle, Ill., earth station for satellite transmission to a data processing center in Puerto Rico. Early last week, AT&T trucked a spare earth station overnight to Indianapolis to make the direct transmission to Puerto Rico

 Dominicks Finer Foods, Inc., another Chicago-based supermarket chain, was unable to connect remote terminals at 43 of its 89 stores to host computers in Northlake, Ill. "They couldn't order any Cheerios," said Dennis Farley, manager of DP at Dominicks, "and we couldn't tell them the price of Cheerios.' Cellular phones re-established voice communications, but 20 stores were cut off from host computers until last Thursday.

 MCI Communications Corp. dispatched portable microwave dishes to large end-user organizations isolated from Illinois Bell's local telephone network by the fire. Among those patched into MCI's national phone network were the Chicago offices of Dun & Bradstreet Corp., Prime Computer, Inc., the Hartford Insurance Group, Nalco Chemical Co. and Bekins Van Lines Co.

Seven charged in \$70 million wire fraud

BY JEAN S. BOZMAN

CHICAGO - FBI agents two weeks ago arrested seven people in Chicago and Detroit, charging them with wire fraud in connec tion with a Friday the 13th electronic bank heist that diverted nearly \$70 million in deposits at the First National Bank of Chicago to Vienna.

The plot was foiled Monday when executives at United Airlines and Merrill Lynch & Co. refused to sign off on separate transfers from their First Chicago corporate accounts. Both of the transfers showed up as overdrafts of more than \$24 million.

Two of those arrested, Otis Wilson, 30, and Gabriel Taylor, 27, both of Chicago, were em ployees at First Chicago, said Federal Bureau of Investigations spokesman Bob Long. Taylor was said to be one of two employees who operated the bank's international wire transfer system; Wilson worked in the cash disbursement department. Both Wilson and Taylor earned less than \$20,000 a year.

Impersonations

The other five people were arrested for allegedly planning the attempted theft and for impersonating bank executives granting verbal approval. The arrests were based on tape recordings of false verbal authorizations allegedly given by the suspects.

Ironically, verbal authorization has long been used as a check on wire transfer security, said Donn Parker, senior management consultant at SRI International in Menlo Park, Calif. "Fifteen to 20 years ago, bankers were able to verify each other's identities over the phone,' Parker explained, "Now, these same bankers sit in their offices

as managers of 30 funds-transfer clerks who are capable of zapping billions of dollars around the

About \$49 million was tran ferred from First Chicago to Citibank NA in New York, which is a correspondent for Creditanstalt. an Austrian bank. The money \$25 million from the United Airlines account and \$24 million from the Merrill Lynch account, was returned last week after having been deposited in Vienna.

Another \$19.8 million had been transferred from the First Chicago account of Brown-Forman Corp. in Louisville, Kv., and sent to Vienna's Focobank through Chase Manhattan Bank NA in New York.

Had the theft been successful, according to the FBI, the money would have been moved out of the international bank system and converted into some form of cash or goods, such as diamonds.

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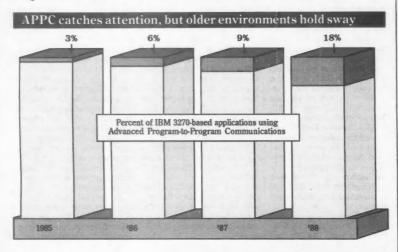




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TRENDS

Systems Network Architecture



espite all the pomp and circumstance surrounding the ISO's Open Systems Interconnect (OSI) model, it is still an SNA world.

Estimates on the installed base of IBM's Systems Network Architecture (SNA) range as high as 70% of corporate networks. And though some of these sites will migrate to OSI, they will not do so overnight.

The staying power of 14year-old SNA extends even to older forms of the technology, according to the International Technology Group, a Los Altos, Calif.-based consulting and research firm.

IBM has spent the last year evangelizing the virtues of Advanced Program-to-Program Communications (APPC), also known as LU6.2, to users and developers alike. APPC is a key component of IBM's plans for top-to-bottom connectivity.

Although APPC-based applications have grown steadily since the protocol's 1985 introduction, they continue to trail as a percentage of the entrenched IBM 3270, or LU2, environment, according to International Technology Group.

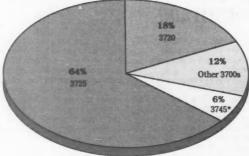
Also banging tough are the older IBM controllers. While the 3725 maintains a grip on 64% of the installed base, International Technology Group predicts IBM's newest addition, the 3745, will slowly begin to eat away at that market share.

More recently, IBM continues to lead in turnkey network management systems, securing a 21% market segment in 1987 due in large part to sales of its Netview product family.

PATRICIA KEEFE

Tiny now, 3745 share will eat at 3725's

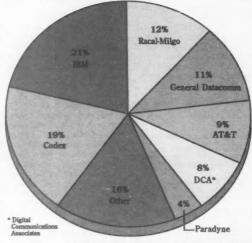
PERCENT WORLDWIDE INSTALLED BASE OF IBM 3700 CONTROLLERS



* Based on orders placed before May 1, 1988

IBM keeps lead in network

PERCENT U.S. MARKET SHARE BY INSTALLED BASE



INFORMATION PROVIDED BY INTERNATIONAL TECHNOLOGY GROUP CW CHARTS

INSIDE LINES

Here's Microsoft's sequel. The much-anticipated single-user data base program is looming for a summer announcement, with shipping scheduled for the first half of 1989. Developers at Microsoft are tightly focused on the emerging OS/2 relational data base management system market, according to sources familiar with the development effort. Microsoft will use a version of its Basic language tool as the data base programming language at the heart of the front-end program. With SQL hooks embedded in the language, the data base will have an SQL implementation and use SQL Server as the back-end SQL engine needed to drive the program, sources said. That could spark a firefight with Ashton-Tate, which has a stake in SQL Server and apparently has a noncompete deal with Microsoft in certain data base workstation markets.

Speaking of Ashton-Tate, guess what? At its annual shareholders' meeting this week, Ashton-Tate is expected to sidestep the July 31 deadline for Dbase IV's shipment because of development delays, sources close to the company said. The Taters are expected to announce they will meet the July deadline by shipping a bare-bones 1.0 version of the product that will be missing an all-important SQL implementation. The SQL version will reportedly appear as a 1.1 release that will ship sometime in the fourth quarter.

Crash hits home. MIS executives are feeling the effects of the Oct. 19 stock market crash in their wallets, according to a salary survey by compensation specialists Edward Perlin Associates in New York. The survey shows that the crash and intensified competition among companies caused average salary increases to drop from 7.9% in 1987 to 3.6% this year.

Server you right. Oracle's data base server for Intel chipbased micros is a little late, but it still beats the top three micro firms, which all promise servers, to market. Dubbed LAN Server Oracle, the product runs under Kenix and recently began shipping to some key accounts, such as Chrysler, which is using the product to manage engine and building parts inventories. For those awaiting the firm's OS/2 version, it reportedly will ship this summer.

Huddling in the Hub. Representatives from most of the major hardware users groups will be meeting today in Boston to discuss common interests and a possible plan to launch a coalition. Attendees will include a representative from Guide International, the IBM large systems users group, as well as users of hardware from Honeywell, Xerox, NCR, Wang and Data General.

DEC didn't have it this time. Behind the happy faces at the recent unveiling of a joint networking design and support venture between HP and Northern Telecom lurked the ornery shadow of DEC. HP wasn't exactly Northern Telecom's first choice, one pundit said. He reported that the private branch exchange maker "worked real hard to do this with DEC" but was not able to reach an agreement.

Playing it loose in Rio. ADAPSO, the software trade association, is not too thrilled with Brazil's new regulations on imported software. The rules were supposed to curb Brazil's protectionist policy of blocking software imports and thus avert U.S. trade sanctions. But Ron Palenski, ADAPSO's general counsel, said that at first glance, the regulations appear "loosey-goosey... they still have a lot of room for mischief."

Dubious distinction of the week award goes to Computer Consoles, which last week jumped uninvited on the Open Software Foundation bandwagon by announcing that its Officepower software will run under the OSF operating system. Of course, that operating system is not scheduled to be available for at least 18 months and is to be based on an as-yet-unreleased version of IBM's AIX. So unless IBM is giving Computer Consoles the inside track, we'll put that announcement in the "tell us another one" category. If you're clued in to the future of AIX, call into the CW hot line at 800-343-6474 or 617-879-0700 and tip off News Editor Pete Bartolik.

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